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FOR THE FARM GARDEN & HOUSEHOLD

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☞ *The stars (*) in the following Index show where Illustrations occur. Articles referring directly or indirectly to Cattle, Flowers, Poultry, Insects, Manures, Trees, Weeds, etc., will be found indexed under these general heads.*

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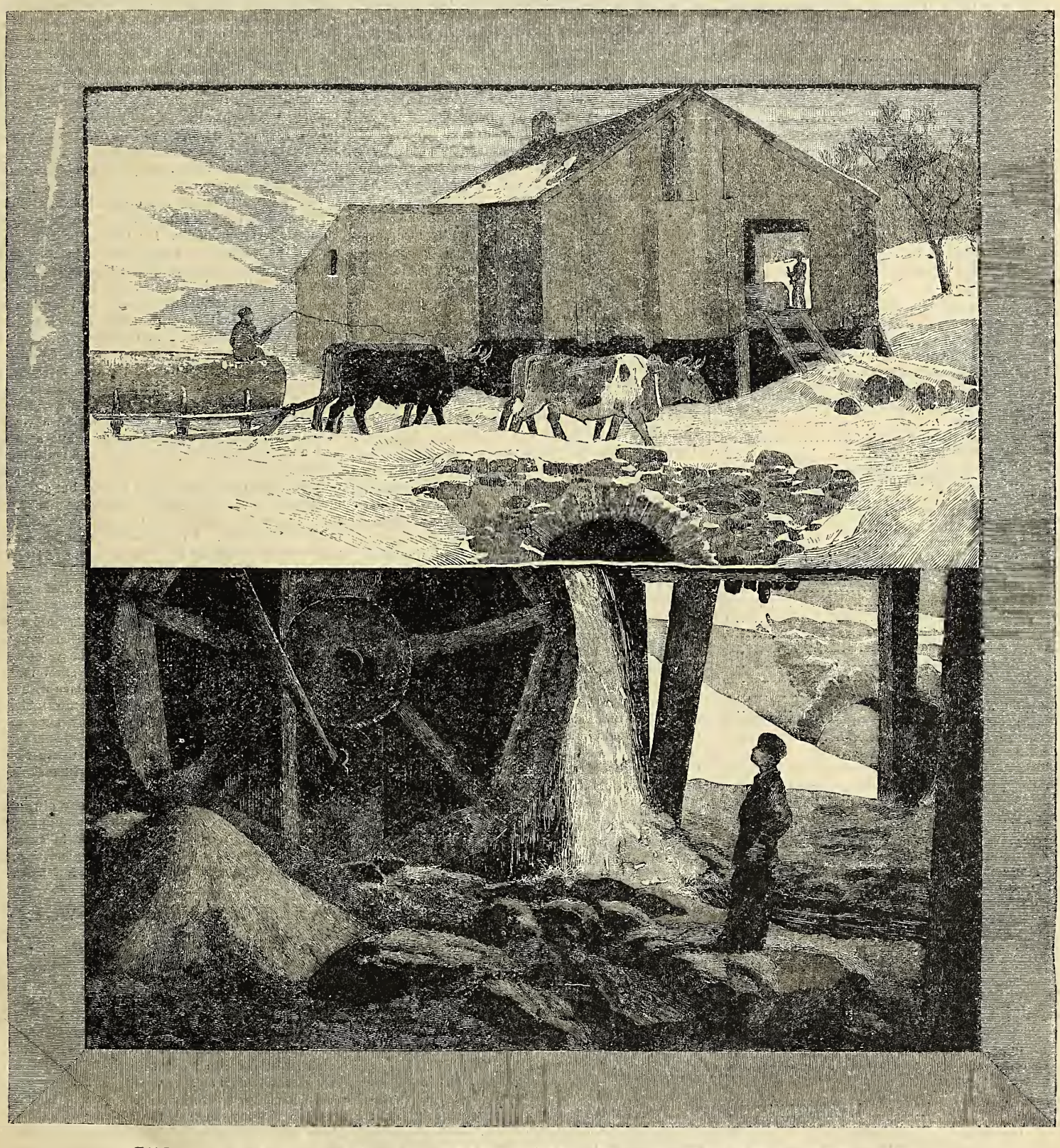

THE OLD SAW-MILL AND ITS WATER-WHEEL.—*Designed and Engraved for the American Agriculturist.*

When the logging is excellent, which in some localities often lasts for only a short time, the scene in and around a country saw mill is a very busy one. The heavy sleds come loaded with the large logs, and carry away the plank and boards. Day and night the great wheel is kept turning by the force of the falling water, and communicates its motion to the saw, which runs with great speed.

The artist gives us a view of a country saw mill, and to use his expression: "A study from nature." It is a very respectable looking mill—far more so than many that are located along our water courses. The lower half of the engraving gives a view of the great wheel, one of the most interesting parts of a saw-mill to a schoolboy who may be deep in the study of natural philosophy.

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See specially now page 35.

AMERICAN AGRICULTURIST.

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Suggestions of and for the Season.

The beginning of the year should be a time for the balancing of the farm accounts. New books are opened, and with the inventory taken, as suggested last month, the farmer knows how he stands. The first of January usually brings an end to the paper subscriptions, and if not already attended to the renewals should be made at once. It may be that some farm journal or family paper has come to sight that will need to be added to the list of those already counted as necessary. Farmers as a class are yearly reading more and more, and for a number of very good reasons. The improvements of farm machinery allow of more time for mental culture; and not the least of the reasons for an increased reading among farmers is the better quality of the matter provided for them by the agricultural press.—It may be that the insurance policy runs out with the old year, and this important safeguard against distress should be looked to. Only the best companies should be patronized; the rates for ordinary farm buildings should be comparatively low. A co-operative system of insurance has worked admirably in some localities.

It is now midwinter, and much of the farmer's labor is to keep himself and family, and the farm stock, warm and comfortable. For the household there will be a good supply of fuel needed. This does not mean that a sizable pile of green wood just from the living tree, and full of water, is adequate. Dry, well seasoned wood is the only kind that is either pleasant or economical to use, especially in the stove in early morning. The man who, with a large wood lot on his farm, does not provide a good supply of dry wood for the household, is not doing his duty. The slip-shod method of chopping the daily wood on the day it is to be used, though it may give a *freshness* to the product, is a fruitful source of bad breakfasts and bad tempers, and it may be in extreme cases leads to harsh words and disgraceful actions. All this can be avoided by cutting a year's supply of wood during the winter, and giving it the whole of the following summer to become thoroughly dried. In this way the cutting and splitting of the year's fire wood becomes a part of the regular winter work on the farm. The methods to be observed in harvesting this crop should be as systematic and economical as any other. Unless the land is to be cleared, the trees that are old and dying should be cut first, thus preserving the wood lot in good condition.

Live Stock Notes.

The cow stable should be kept neat and clean. Unless this is done the milk cannot be perfectly pure. The air of a filthy stable will taint milk that is drawn in it, and when the air is foul, the cows under such lack of care will be more or less dirty, and some of this filth will find its way into the pail. A careful milker will remove by brushing all such matter that might, in part, otherwise reach the dairy room or the consumer of the milk. Milk is a valuable product, and the satisfaction of producing it as well as the pleasure of using in the household economy, depend upon its purity. At no time in the year is it more valuable or more difficult to have it pure than in the winter, therefore the one who does, by proper care, produce it now, gains in more ways than one. The cows should not only be kept clean, but well sheltered, fed, and watered. Unless these things are observed, dairying in winter must be a source of loss. Just what the shelter shall be, must be determined somewhat by circumstances, and the daily rations will vary with the crops grown, and the system of management. Whatever the feed may be—hay, cut straw, corn-fodder, each with a quantity of ground feed, or a combination of them all, it should be given with great regularity. An hour before the time one day, and an equal period after on the following day, is an irregularity in which the farmer who looks to a profit from his stock, cannot afford to indulge.

The horses will generally have an easier time during winter than in the busy months of spring and summer. They should not therefore receive a light food and less care, but be so kept that they will be in excellent trim when the spring opens. Horses that come to the heavy work of spring without an accumulation of flesh, or stored up force, are unfit for the work, and have not been properly and therefore profitably wintered. The remarks under cattle, as to neatness in the stable, a plenty of feed, and pure water apply with great force in the case of horses. Serious injury is done to many horses, by being exposed to cold winds after a hard drive, and when they have become much heated. All drafts of cold air should be avoided at such times, and the body of the horse covered with a blanket. Sweaty horses that are taken at once to a warm stable, seldom need the protection of blankets, and if they are used it makes the animals more susceptible to chills when hitched out of doors.

The very early lambs are dropped during this month, and if mild weather favors them they may be made very profitable for the early market. Should the weather be severe, the lambs must be kept from being chilled through; this may be done by wrapping them in blankets and administering a little hot ginger tea. The ewes should have the warmest pens in the stable, and may need to be nursed with warm gruel for a few days.

Pork, of late years, has been a profitable crop only when grown according to the best methods. This includes the keeping of the best breed for the kind of pork desired. Small breeds that fatten from birth and yield a good carcass within a year are suited to small farms near market, while a pig with a larger frame, a slower growth, and maturing later may suit the larger farms of the West. It not only does not pay to keep poor breeds, but a good breed must not be kept poorly. A pig is a machine for flesh making, and it must not expend its forces in other directions. A pig is an unprofitable animal to turn the compost heap—other forms of labor are cheaper. Cleanness is another essential in profitable pork growing. The pigs should be killed early in the winter, as later keeping is expensive; besides it gives more room for the few that are reserved for breeding. There have been many thorough experiments made to test the value of winter shelter for swine, and they all show that pigs to winter well must have a warm place with a clean bed, and feed enough to be comfortable. They are not to be fattened, but simply kept in good condition. Brood sows coupled now, bring pigs in May, an excellent season, as the weather is warm and settled, and the young pigs will make a rapid growth.

If eggs are desired in winter—and they always are in demand—the fowls will require a warm place and a plenty of food and water. Lime in some form, as powdered oyster shells, old plastering, etc., will be needed to furnish material for shells.

Notes on Orchard and Garden Work.

Note—Work! The first and last words in the title of our monthly remarks in this department, demand a passing word. It is assumed that work is one of the first principles of success in the orchard and garden. Without work, hard work, and an abundance of it, the growing of vegetables, and the raising of fruit must prove a failure. An orchard will not run itself with profit any more than a steam plow or a saw mill; and to keep a vegetable garden in proper order is often more of a tax upon the muscle than the steering of a ship. Along with this labor of the hand must go an activity of the mind. The seed drill and the pruning knife, as well as all other orchard and garden implements need to be used intelligently. Let no one believe that he can succeed in this department without thinking—gardening is not a mere pastime, and fruit growing is far from being an occupation for a man who will not work his brains.

With this view of labor it is evident that there are two sets or classes of implements to be used by the gardener and horticulturist in the performance

of his work;—implements to be used in the hands, and tools to aid the head. A hoe is a garden implement, but it is no more of one than a principle of plant growth, which, when understood, makes every stroke of the hoe more effective. The best seed planter that modern mechanical skill produces could be only a source of loss when guided in its work by one who knows nothing of the conditions most favorable for each of the many garden seeds. These principles which underlie proper, and therefore profitable gardening, are the accumulated experience of all past ages, and are put within the reach of all in books upon the various subjects which belong to the orchard and garden. Some of these books are of a general character, and treat of vegetation as a whole, without making special reference to any particular vegetable or fruit. Such books give the ground work or fundamental principles upon which the special treatises rest. For example, the nature of soils, the composition of the atmosphere, and the physiological laws which govern the growth of plants are general subjects which involve principles that apply to all vegetation. The person who knows these principles — understands how plants grow, when, where, and how they get their foods, is certainly possessed of superior tools in the culture of field or garden crops. We can serve our readers no better than to commend to them the careful study of the two books: "How Crops Grow," and "How Crops Feed," by Professor S. W. Johnson. A thorough mastery of these two volumes—and they are not large ones—will not only make all future farm or garden labor more intelligent, but more pleasing and profitable. There is no time that is better adapted for this work of storing the mind with valuable knowledge than during the long evenings of midwinter. The busy days of spring and summer usually leave but little time for study; but thanks to labor-saving machines, more time can now be spared for systematic thinking.

Orchard and Nursery.

There are several books devoted specially to the interests of the orchardist. We do not know of a book that gives more valuable information for the outlay than "The Fruit Garden," by Patrick Barry. The language is plain and clear; it treats the whole subject of fruit-growing, and is not confined to the garden fruits, as the title might suggest. An important feature of Mr. Barry's book is the attention that is given to the statement of principles that underlie the successful growing of young trees—a part of the book that is the outgrowth of a lifetime of practical work in one of the largest nurseries in the world. Another work of great value is "The American Fruit Culturist," by J. J. Thomas, which contains a very full descriptive list of the leading varieties. Warder's "American Pomology" is another work, which, though not including all that the title would lead one to infer, is excellent as far as it goes; it is in some respects a western book, both as to nursery management, and the descriptive list of apples. For a larger and more expensive work Downing's "Fruits and Fruit Trees of America" is invaluable.

There are not many things to be done in the orchard at this season of the year. Manure may be carted, or better, if there is snow, drawn out on a sled among the trees. Cions can be cut, tied in bundles, labeled, and stored in sawdust or sand. The clusters of the Tent Caterpillar can now be cut away, thus saving the trees from the attacks of the worms that hatch from them in early spring.

The Fruit Garden.

The books on fruit culture mentioned under the preceding heading contain much upon the "small fruits," but there are a few important works that treat specially of the products of the fruit garden. The leading one of these is Fuller's "Small Fruit Culturist," a new and revised edition of which has just been issued from the press. "Success with Small Fruits," by E. P. Roe, is a larger and profusely illustrated work. Among the leading books devoted to a single fruit are Professor Husmann's "Grape Growing and Wine Making," Fuller's "Grape Culturist," White's "Cranberry Culturist," and Fuller's "Strawberry Culturist." These books, if carefully read, will teach the grower of small fruits many valuable facts and principles. They will also inspire him with a greater love for his work. It is our desire that every farmer should have a well stocked Fruit Garden, that his table may be supplied with choice fruit from the time the earliest strawberry ripens until the latest grape is gone. It has been our misfortune to sit down to a summer dinner at the table of many a farmer, upon which there was no sign of a fruit of any kind. A man with even a ten-acre farm cannot afford to be without a portion of it devoted to the growth of such fruits as strawberries, raspberries, blackberries, currants and grapes.

The Kitchen and Market Garden.

The leading helps of intelligent vegetable gardening are the "Gardening for Profit," by Peter Henderson; Quinn's "Money in the Garden"; and Brill's "Farm Gardening and Seed Growing." All of these are thoroughly practical, and are written by men who do not keep the secrets of their success from the reader. There are a number of books and pamphlets devoted to special crops, such as "Onion Raising," by J. J. H. Gregory. Also his works on Squashes, Cabbages, Carrots, etc.

The present work in the garden consists in looking after the stored crops that they may not suffer from extremes of heat and cold. The cold frames need daily care, and the sashes should be closed only when the temperature is below 30°. Hot-beds may be started this month for early vegetables in the Southern States. Now is a good time to perfect all the plans for the work for the next season. It is well to have the orders for seeds sent in early. Much can be learned from a careful reading of the catalogues of the various seedsmen, and they should be procured so soon as issued.

The Flower Garden and Lawn.

It may be that the grounds are to be improved the coming year, and a work like Mr. Weidenmann's "Beautifying Country Homes" will offer many valuable suggestions. Downing's "Landscape Gardening" is another standard work. Those who feel that only a trifle can be expended in a book will find Henderson's "Gardening for Pleasure" a valuable guide to the management of small places. There are a number of special treatises in this department, as "Parsons on the Rose," etc.

There will be but little out-of-door work at this time. If heavy snows fall, the limbs of the Evergreens will need attention. The load of snow is best removed so soon as it has fallen before it has become frozen to the bushes. The paths should be used in winter, and no crossing of the lawn by either vehicles or persons on foot should be tolerated; it spoils the looks of the ground to have "sheep paths" thus made in winter by those who would sacrifice beauty to save a few steps.

Greenhouse and Window Plants.

The admirable work, "Winter Greeneries," by E. A. Johnson, and "The Window Flower Garden," by J. J. Heinrich, will furnish valuable assistance to those who wish to grow plants and flowers indoors. The two principal items in the care of house plants are water and insects. Plants suffer greatly from a lack of proper watering. The whole soil of the pot should be kept moist. The frequent and light application of water that only keeps the upper layer wet, is ruinous to successful plant growing. On the other hand, most plants will succumb when the roots are continuously kept sopping wet. It is sometimes well to withhold watering until the plants show the lack by wilting, that it may be certain that the watering is not overdone. The Red Spider is one of the worst "insect" pests, but is not difficult to destroy by frequent washing of the foliage with water. The Mealy Bug is much easier to find, from its large size and white color. It must be removed by hand picking.

Popular Science.—Keeping Warm.

Some Scientific Facts and Principles, Plainly Stated, with Practical Lessons they Teach.

During January and February, over most of this country and the whole northern hemisphere, a large proportion of the time, effort, and expense of all classes is devoted to keeping warm—a much larger proportion than one would suppose without some thought on the subject. Fuel is only one item; fourfold clothing and bedding as compared with summer, warmer dwellings and largely increased food supplies are to be reckoned in. There are some scientific principles involved, so simple that all may comprehend them, an understanding of which will be of practical advantage. They apply to all warm-blooded land animals, man included.

98½°

The bodies of all human beings are so constituted that while some parts may be temporarily benumbed with cold without danger, the blood that circulates through the heart and through the system generally, *must* be maintained uniformly at just about 98½° of temperature (98½° Fahrenheit, or 37° centigrade). If the heat of the blood rises or falls only 6 or 7 degrees from this normal point, and continues so, fatal results are expected. Every degree that disease elevates the general internal heat above 100°, is a rapid approach towards the danger point, and when only 105° is reached, the most skillful efforts of physicians are usually needed to save life. On the contrary, even in the coldest regions where the thermometer marks 60° or 70°, or more, below the freezing point, the internal heat *must* be kept up, and if it falls only from 98° to 94° or 93°, and continues thus, there is great danger that the wheels of life will stop. (These are general statements, applicable to a healthy condition. Cases have been reported where in tetanus or lockjaw the temperature rose to nearly 111°, while in asthma it sunk to 78°, and in cholera to 67°.)

Developing Heat.

The natural process of maintaining the uniformity of blood temperature is a most interesting study, of decided practical utility to every one. Whatever the nature of heat, its relations to electricity, to mechanical and chemical force, its various methods of production or exhibition, etc., we all know some of its *effects*, and some methods of securing its manifestation. We know it may *apparently* exist in an invisible or inactive form; that in a cold room with cold wood or coal and cold matches, we can develope intense heat; that ice water poured upon ice cold unslaked lime will produce a scalding temperature; that beating cold iron with a cold hammer will sensibly warm it; that simply rubbing two cold pieces of wood together, makes them hot; that electricity from a cold battery sent through a fine wire or a film of charcoal, will produce the intense heat that gives the electric light. So chemical or mechanical, or electrical action, developes heat that was before latent, or insensible, or that existed in another form.

How Heat is Diffused.

We know also that heat is *radiated*, that is, it flies out in straight lines, as from a fire or the sun; we can feel the heat strike us. These heat rays can be bent like light rays, by interposing a reflecting surface in their path to change their direction.

Heat is also *carried* as freight, so to speak, as when air takes it from a stove and carries it to the top of a room, or from a hearth fire out of the chimney; or when water particles carry it from the bottom to the top of a kettle set over the fire.

Heat is also *conducted* or passed along from one body to another, and also from one particle to another in the same substance. Hold one end or side of a piece of metal to a fire, and the nearest particles of metal will take in heat, and pass it to the next particles, and these to the next, and so on until the heat is *conducted* a long distance. But experience and experiments show that different substances differ very greatly in their ability to thus *conduct* heat through them. This is a matter of

much practical importance, as we shall see. Iron for example, conducts heat freely and rapidly through itself; wood and glass feebly and slowly. *Air conducts very little heat through its substance*, though it allows *radiated* heat (in straight lines) to pass freely; and if the air particles are free to move, they *carry* heat from one point to another, usually upward, but horizontally when moving thus, as in wind currents.

How Heat is Produced.

The external, artificial heat used for maintaining the warmth of our bodies, beyond what comes from the sun, or from air currents, is mainly derived from chemical action in burning wood or coal. One-fifth of air (of its weight) is a gas called oxygen. Nine-tenths of water is oxygen. In the air the oxygen is simply mixed with another gas (nitrogen) and very readily leaves it. In water the oxygen is strongly united or combined with another substance (hydrogen) which it will not readily leave.—So, while the *free* oxygen of the air increases a fire, the oxygen is tied up in the water, and water extinguishes a fire by shutting out free air oxygen.

Coal, hard or soft, is mainly a substance called carbon. Diamonds are pure carbon in a crystal form. Almost all substances that grow in plant form, and all kinds of flesh, are largely made up of this carbon. If we put under cover (to shut out air) wood, straw, grain, flour, vegetables, fruits, or any kind of flesh, as lean or fat meat, or almost any thing used for food, and apply strong heat, we drive off a good deal of water in the form of vapor, and a little of some other substances, and we have a mass of nearly pure carbon or charcoal left—in bulk usually as large as the original substance heated. This is seen in changing wood into charcoal under a covering of earth, where a little air is admitted at the bottom to burn just enough of the wood to heat or char the rest. The same would happen to masses of our common food put in place of part of the wood. If we admit too much air, the charcoal itself will disappear. Charcoal gives a hotter fire than wood, because this preliminary heating has removed the other substances that in turning to vapor and gases absorb and carry off a great deal of heat.

Some Properties of Heat.

Other preliminary items. Sensible or active heat seems to combine with some substances and *disappear*. If the air in a room should suddenly expand to fill two rooms, some heat would disappear, and the expanded air would feel much colder. If we condense the air suddenly into a much smaller space, it will give up heat that was before insensible. If we put a piece of tinder in the closed end of a gun barrel, and with a close-fitting ram-rod quickly *condense* the air upon the tinder, it will give out so much heat as to set the tinder on fire.

If one pint of water be changed to hot or cold vapor, the vapor will take up and *conceal* nearly 1,000 degrees of heat, or heat enough to raise 5½ pints of water from freezing (32°) to boiling (212°). (If this heat was not concealed, or did not disappear, the clouds, which are cold water vapor, would be much hotter than melted lead.) This heat is similarly concealed, whether the water turns into visible steam at 212°, or passes off as cold *invisible* vapor in the air, or in the *visible* vapor of fogs and clouds. The point is, that the evaporation of water, hot or cold, invariably produces lower temperature by concealing and carrying away a great amount of heat.

We can keep water, milk, etc., cool and render them colder, by wrapping the jug, pitcher or other containing vessel with cloth and keeping this moistened. The evaporation going on carries off heat. If the vessel be thin porcelain or earthen ware or metal, the heat will pass outwardly to the evaporating surface more readily. Damp or wet clothing, for the same reason, quickly cools the body and produces chilliness, and is very likely to induce a cold, especially if not uniformly damp, as we explained under "Catching Cold" last month.

One point more. When air is warmed, it has the power of holding concealed an increased amount of *water* in the form of invisible vapor; and when cooled it gives out this water again in a visible form. There is frequently more water in the air above us on a hot, clear summer day, than on other dark, cloudy, or rainy ones. In the latter case a cold air wave, or other cause, has reduced the temperature of the air above us; it has less capacity for concealed moisture, and gives it up; the moisture thus set at liberty condenses into visible clouds, and if the uniting of these little water globules be continued, they become too heavy to float in the air and fall as rain drops. Heating the air in a room makes it hide water; it becomes hungry for more and extracts it from the skin and from our lungs; we feel parched and disagreeable. Lesson: always keep plenty of evaporating water surface in any and every room warmed by stove, furnace, or in any way.

A Fire in the Blood.

When the oxygen of the air unites with the carbon of hard coal or charcoal, or of wood, or of flour, meat, or of any other food, a compound is formed, viz., a gas, which we call Carbonic Acid. The process of forming this compound sets at liberty heat which was before entirely concealed, or which existed in another form, and when coal or wood is burned rapidly we have a hot fire. The same process goes on when wood rots away, but the heat is developed so slowly that we do not notice it.

Precisely the same thing is taking place in the human body all the time. The food we eat and digest, is in part absorbed into the blood, and carried by it everywhere throughout the body. But at the same time the blood passing through the lungs is constantly picking up oxygen there from the air which we breathe into the lungs, and this, too, goes all through the body, and at millions of points one carbon atom of the food is uniting with two atoms of oxygen from the air, forming carbonic acid, *and setting heat at liberty*, precisely the same as takes place in burning wood or coal in the stove. There is only a small product of heat at any one point in the blood, but it takes place at so many points that there is enough developed to keep up the general temperature. And a wonderful provision it is, that without our supervision, or knowledge even, this ever burning fire goes on within us, just so as to keep the whole body at about 98°. (We speak only of the main source of animal heat. There are other combinations going on in the body, which produce more or less heat, such as the union of hydrogen from food with oxygen, which escapes as water; the union of minute quantities of sulphur and of phosphorus with oxygen, etc. Most probably more or less heat is also derived from the mechanical movements of the various organs.)

If the supply of food fails in the blood for a time, from fasting or sickness, then the oxygen in the blood attacks any stored up fuel, as fat, flesh and other organs of the body, using their carbon to keep up the ever necessary warmth. The weight of the body grows less, and when no more fat or flesh can be found to make heat, cold and death come on. The same result follows if the lungs become so diseased as not to furnish the air supplying oxygen fast enough to keep up the internal fire. Stop the entrance of air for a few minutes by closing the windpipe with a cord, or by filling the lungs with water, and heat production stops in the blood, the temperature falls below 93°, and the human machinery ceases to work.

The carbonic acid produced is poisonous. In the stove it escapes through the pipe. That formed in the blood is carried to the lungs and thrown out into the air. Too many persons breathing in a close room fill it with so much carbonic acid that it becomes very unhealthful, if not dangerous.

The blood carries the heat to the surface of the body, as well as to all other parts, and a good deal of heat escapes off into the air. If the air is cold this escape is more rapid, and more heat must be produced within to supply the waste. That means more fuel, that is more food, *or* more flesh is consumed.—Remember that the blood *must* be kept up to about 98°. Of course, then, in cold weather more food is necessary or the body becomes emaciated. But anything that stops escape of heat from the surface of the body, saves food, or saves using up flesh. Warm clothing, warm air, warm dwellings, warm stables, warm sheds, all help to stop this waste of heat.

Further Practical Lessons.

As to domestic animals, is not the above a positive proof, that sheltering all animals from cold weather, from chilling winds which by their rapid motion carry off heat more rapidly, is the way to save food and to save waste of flesh? If by stopping this waste of heat from the surface all the food consumed will not be wanted to make heat, a portion of it can go to increasing the flesh, that is to producing growth, or more can be used in making milk, eggs, etc., within the animal.

Dyspeptic persons, those having feeble digestion, or a poor appetite, get less internal heat from food combustion, and suffer from cold. Such persons need a warmer atmosphere, or warmer dwellings, and warmer clothing to retain the heat that is produced. This applies to all animals.

Close-fitting garments, garters, lacing, boots, shoes, neck-ties, etc., that prevent free easy circulation of the blood, each and all diminish the amount of heat produced, and its unform distribution. Exercise promotes more rapid circulation of the blood and increased heat production.

We stated above that evaporation of water carries off much heat. Rubbing wet horses and other animals dry is very useful not only to save heat, but also to save cold taking, as explained in our last number. For the same reason any damp garments should be replaced with dry ones as soon as possible, or enough covering be added to prevent chilliness from the evaporation.

Free perspiration (sweating) in hot weather carries off a large amount of heat, and keeps down the temperature. If perspiration be checked, sponging with water aids in cases of sun stroke or depression from heat. Persons have gone into hot ovens unharmed by encasing themselves in moistened garments, the evaporation keeping down the heat about the body. Green wood, besides its inconvenience, is very unprofitable. A large amount of heat which the dry portions would yield, is lost by being carried off in the evaporation of the sap. So of any wet or damp fuel of any kind.

Confined Air a Protection Against Cold.

As confined air is a poor conductor of heat, all fabrics that are porous, that is full of little interstices, tubes, or holes filled with air, are the best protectors to keep heat from escaping from the surface of the body. A loosely woven garment or bed coverlid is warmer than a compact, firmly woven one, because the air in the texture of the former conducts away heat less rapidly than the more solid ones. Loose-fitting garments are warmer than close-fitting ones, for reasons above given, and also because the air space between them and the skin is a non-conductor of heat.

Stone, brick, or wooden walls with perpendicular air spaces in them, are warmer than solid walls, because the air conducts heat away less than the solid materials. A sheathing of tarred paper, or pasteboard, or of any thick paper even, placed midway between the clap-boarding and the plastering, to form two thin air-chambers instead of one, adds greatly to the warmth of a house or other building. Two half-inch boards, set a little apart to leave an air space between, makes a far warmer house wall than the same thickness of wood in inch boards.

A layer of loose straw put between the wall and the earth banking up of a cellar, adds much to the warmth, on account of the air in the meshes of the straw. The same is true in covering roots or apples to be left out in heaps over winter.

Double glass windows are several times warmer than single glass, because of the non-conducting film of air between. So of double doors.

Moving air both carries off heat faster of itself, and also increases evaporation, thus largely diminishing the temperature. A very small crack in a

window, under or over, or by the side of a door or sash, or elsewhere, produces a draft that requires much extra fuel to counteract the effects.

Bee Notes for January.

Breeding Bees.

There is no subject which is attracting more attention from the bee-keepers of America at the present time, than the improving of the quality of their stock by judicious care and selection in breeding. The fact that some colony, or colonies each year far excel all the others in the amount of the stores which they gather, suggests to the thoughtful apiarist that were he possessed of the requisite knowledge and skill, the probable profits of his apiary would be far greater than they are at present. *Apis Americana* is a superior strain, or race, of bees that has appeared as the result of superior tact displayed by some bee-keeper in the breeding of his bees. With but little doubt there is in this direction one of the most promising paths towards improved apiculture. The "dollar queen" business, which has grown to such deplorable dimensions in the last few years, as it of necessity precludes all pains-taking, is right in the way of this improved breeding. To make the dollar queen business at all profitable, haste and no pains must be the watch-words of the apiarist. To secure a better type of bees, the utmost caution, and the severest selection must be the firm rule of the bee-keeper.

Care as to Queens,

Heretofore, the principal reliance to secure superiority has been in the careful selection and breeding of the queens. It is easy with care to secure the queen-cells from the best colony in the apiary; to see that the queen larvæ are so started from the egg, that they may be reared in times of greatest activity in the hive, so that there may be no lack of vigor from unfavorable surroundings; and to have them in full, strong colonies from the first to the last, that a proper heat no less than a proper nourishment may be secured. All of these points have been observed by those apiarists who look to superior excellence, and not simply to the dollar.

Care as to Drones.

Among our higher animals, the males are known to be prepotent, and it is regarded as important to select the sires with great care as to be particular with the dams. There is no doubt but that this same law holds true among the lower animals, and therefore with the bees. In fact this law is at the basis of sexual selection in nature, as so well developed by Darwin. But our bees mate on the wing, hence to select the drones has heretofore baffled all efforts. The matter has not been practically solved, and the demand for a method to accomplish impregnation in confinement, is still urgent.

Method to Control the Drones.

At the last meeting of the National Bee-Keeper's Society, at Lexington, Ky., Mr. D. A. Jones suggested a way to control, in part at least, the mating

A BEE GUARD.

on the drone side. This is accomplished by the use of perforated zinc as entrance guards to the hives. These guides are ten inches long, and each guide is a box with the bottom and one side removed. A cross section of this box is one inch square. The holes in this zinc are rectangular, $^3/_{16}$ by $^9/_{16}$ of an inch long. The zinc occupies about as much space as that occupied by the holes, that is about one half of the metal is cut away. These holes, while they permit the workers to pass freely through, are a perfect bar to the drones and the queen. Now by placing this guide with the wanting side against the end or side of the hive, before the entrance, we have a perfect barrier to the drones and the queen, while the workers may pass with freedom.

How to Use the Guides.

By placing these guides before the hives, in our own and near neighbor's apiaries, we may preclude the flight of all such drones are not desired to meet the queens. Of course, if there are wild bees in the vicinity, as is always the case if there are forests near by, then this method is only a help, not a sure preventive of undesirable mating. A still better way to use the guides is to let the drones fly from all but the very best colonies on such days as there are no young queens to fly out, and about one or two o'clock put all the guides at the entrances of the hives, and at night, after the bees are in the hives, kill the drones. The drones should always be kept down either by this method or by cutting out the unhatched drone brood, as they eat a great amount of honey and are expensive and worthless appendages to any hive. I permit drones only in my choicest hives.

SUNDRY HUMBUGS

We can usually judge whether a scheme of doubtful propriety is profitable or not by the rapidity with which imitators increase. For example, when the little metallic toys called "Batteries" of various kinds were first put before the public, the original "Battery man" soon had half a score of imitators. No wonder. Useless combinations of cheap metals, producing no electricity, costing only a few cents to make, and a penny for postage, for a while sold "like hot cakes" for $1.00, and then at 50c. each. —Only a few months ago, the solitary "Matrimonial Insurance" scheme was looked upon as a curiosity, which might attract a few peculiar or "cranky" people, and we passed it by with brief notice. To our surprise we now have circulars and documents relating to no less than six similar institutions, and there are probably many others. This rapid increase shows that there must be many people ready to invest money in such companies, and that the managers find them profitable. These

Wedlock or Matrimonial Insurance Companies

are essentially alike. A member buys, for a small sum, a certificate for $1,000 to $5,000, to be paid to him if he marries. He is subjected to various annual payments and assessments, the whole being involved in a mesh of "ifs" and "provideds," which require some study to understand. If any one is inclined to invest in one of these Associations, he should first inquire if it is regularly chartered? In one State they hold only a charter from the Courts, which has been decided to be illegal, and they have made no deposit with the State authorities. Their responsibility is governed entirely by the honesty of the officers. It is stated that the sums paid to agents as commissions are enormous, and entirely beyond what any prudently conducted company can afford to pay. All proper Fire and Life Insurance Companies are under the supervision of State authorities, and give some pledge that they will do what they promise. Unless these concerns can show that they are responsible, don't invest. So much for the legal aspects of the case. If there are sharp companies there are

Also Sharp Investors.

The holder of a certificate in one of these Wedlock Shops, will of course get married as soon as possible, and receive his $1,000 to $5,000, either one a convenient sum to set up housekeeping with. The circulars, though "rather mixed" to ordinary comprehension, show one thing quite plainly—the sooner an investor gets married, the fewer assessments will he have to pay, and the more money will he get. These circulars, no doubt without intending it, really invite people about to marry to join them, and leave those poor fellows who can't get married to pay the assessments. Most of those who do *not* marry speedily will be

Compelled to Forfeit their Polices

on account of the heavy and rapid assessments. Two of these concerns are already reported as having failed. The demands for payment of certificates being too much for them. Their epitaphs should be, "Died of much Marrying." We look upon these schemes as at best of doubtful utility, and advise the many who write asking us about them, to exercise every precaution, and consider the matter well before they invest.

Counterfeit Money or "Queer."

As this dodge is just now revived in various ingenious forms, a word is due to our newer readers. Observe, that no matter what may be the offer, the parties are too shrewd to have any counterfeit money in their possession. The object of each and every such scheme is to induce those who are impelled by their avarice or their poverty, to give good money and to return therefor—absolutely nothing. The swindlers know very well that the swindled dare not "squeal," because, in order to make a complaint, the victim must admit that he undertook to buy counterfeit money. That is the whole story, and while by noticing this we would not imply that any reader of the *American Agriculturist* needs this caution, we make this explanation, *first*, to show why the swindlers are not arrested; they only indirectly pretend to offer, but never have counterfeit money, and *second*, because our readers may know of thoughtless persons who are tempted by these offers, and they may be able to do these a good service by warning them that the thing is in every form a thorough swindle.

The Variety of Disguises

under which counterfeit money offers are made is amusing. One person advertises "Fac-similes of U. S. Treasury and National Bank Bills." No doubt dishonest persons send $2 for a package, expecting to get counterfeit money, but they receive only neat small photographs, of no use as currency. —Another offers "United States Chromos, the best in the market."—Another holds out inducements "to push the sale of a certain class of goods which I manufacture," and guarantees 100 per cent profit. He says: "The goods are used by every one, and the business is STRICTLY CONFIDENTIAL. As it is the same as all other large paying enterprises, it is not exactly legitimate, possibly you can guess its nature. This business is only for those open for almost anything there is money in."—Another is disposed to be facetious. He says: "I do not wish to sell you any *Counterfeit Money*. I would not touch it for the world. **Oh no!** not at all. You might think from the tone of this letter that I have *counterfeit money* of the best *quality*, but my thoughts do not drift in that region. ** I am a manufacturer of the Greenback Brand of *Cigars*.... etc."

A Grim Kind of Humor

suggests some of the cheap swindles. The sender of a dollar for "instructions for writing without pen or ink" must have laughed when he read: "Use a lead-pencil." That is an old joke. A later one is to offer to send for $5 "an instrument that would play any number of tunes." The buyer must have felt little like laughing when he received a common Jewsharp, and still less so at the intimation that "any fool can learn to play it in a few hours."—Under such fanciful names as "Fairy Organ," etc., the common mouth Harmonicon is advertised in a similar manner, requiring many times its cost to be paid in advance.

Grinding the Farmers.

It is rather singular that the medium through which farmers are most largely swindled, is some kind of a "grinder"—a "Sickle Grinder," or a "Mowing Machine Knife-Grinder." A farmer is asked to sign an agreement—a mere matter of form, you know—to sell the grinders, and return the proceeds when sold. This ingeniously worded "agreement" turns out to be either an order, signed by the farmer for a number of grinders, and for the payment for which he is responsible: or, in some cases a promissory note for their alleged value. This has been so frequently exposed that we have not, for a year or more heard of a "grinder" swindle in the Eastern States. But these chaps have turned to "fields and pastures new," and we now hear of them in Missouri, and at a few other points in the West. Some farmers

in Pike Co., Mo., have timidly paid the demauds; others refused, and told the swindlers to "git." Our Missouri friends are reminded of our often repeated cautiou:

Farmers—Sign Nothing for a Stranger.

Do not even give him your Post Office address in writing, lest it return to plague you. Those who play these tricks should remember that in some newly settled countries there is a Judge, whose name is "Lynch," who often disposes of cases.

"A Pound of Butter from a Pint of Milk."

We supposed that the "Butter Powder" humbug was extiuct, but here it comes anew from—of all places in the country—Boston, where they have laws and enforce them. Let it alone!

A "Newspaper Millenium."

....There are many who have started newspapers, and foolishly asked their subscribers to pay for them. We are now on the eve of "A Newspaper Millenium," which will be marked by furnishing a newspaper "absolutely free." It is plainly shown hy figures—and "figures won't lie"—that wicked publishers who charge for their paper don't know their business. "The Newspaper Millenium" is to hegin by sending the paper for nothing, and making the advertisers pay for the whole. In reading this high pressure circular, we are struck by two facts—1st, the paper will be, when it appears, issued at Cincinuati, a city unfortunately infested by the worst lot of swindlers in the country. And, 2dly, There is to he a premium—a premium as is a premium—so attractive and fascinating—something about "Love," that while the time of issuing the first number of this paper is in the dim, uncertain future, there is no doubt that every intending subscriber wants, and must have, right off, soon, very quick—because "among a gallery of art works it would be picked out and gazed upon and admired and loved above all others." This picture, no douht too utterly utter, ought to be distributed at once. But wicked express companies will charge all sorts of prices, hence send only 25 cts.—the uniform price of delivery, and get this premium. That 25 cts. from each subscriber is at the bottom of this plausible scheme.

Peter Henderson Speaks out in Meeting.

There are some of the old style gardeuers and florists, who do not like Mr. Henderson's way of telling whatever he may kuow that he thinks will benefit others. There are still left a few of those who believe in keeping "the secrets of the trade." When these found that Mr. Henderson, in his "Gardeniug for Profit" and "Practical Floriculture," told all that they knew, and many things they had never thought of, they were very angry. Still Mr. H. has helped many to be successful, and we think has been all the more successful himself. Mr. H. having hit upon a method which greatly increased the certainty with which he could raise seedling plants, not only of such rapidly growing things as cabbages, but of slower starting greenhouse plants and of shrubs; employed it in his own establishmeut, to his great advantage, and might have gone on doing this for years before his money-making method was discovered. But at the Aunual Meeting of the Amer. Association of Nurserymen, Florists, and Seedsmen, held at Dayton, Ohio, in June last—of all places in the world, did he go and "speak right out in meeting," and tell every competitor of his money-making dodge. It is very simple, as most valuable things are. In preparing his seed beds, or seed boxes: First, he puts down a layer of good loam, run through a half-inch sieve, and patted down moderately firm. Over this about one-fourth of an inch of dried Sphagnum—common peat moss, such as is used for packing, thoroughly dried, and run through a wire sieve about as fiue as a mosquito-wire gauze. This powdered moss, about in the condition of fine sawdust, being evenly spread. Upon this moss was placed a coating of loam about three-fourths of au inch thiek, and well levelled. The seeds were sown thickly on the loam, pressed down by a smooth board, aud fine moss sifted ou, sufficient to cover the seeds, and the whole watered with a fine rose. The top layer of moss keeps the surface always moist, preventing all drying and baking, and allows the young plants to easily reach the light. The layer of soil below it affords nourishment to the seedlings, which, as soon as their roots reached the layer of fine moss below, form a mass of fibrous roots. No one familiar with raising seedlings need to have the advantages of this method pointed out. This method must have been worth to every member of the convention much more than all his expenses in attending it. We commend it to our amateur cultivators, who will find it of great advantage, especially with seeds slow in germinating. We have not tried exactly Mr. H.'s plan, hut we have often covered seed pans with a layer of ordinary sphaguum moss, not pulverized, to prevent the soil from becoming hard, and removing it as soon as the seeds began to germinate, but Mr. Henderson's method is vastly better, and he deserves the thanks of all cultivators for freely giving it.

Railway Building.

It is computed that there are between two hundred thousand and two hundred and twenty-five thousand miles of railroads in the whole world, of which nearly one hundred thousand are in the United States. Over six thousand miles of roads have been built iu the States during 1881, as against five thousand during 1880. People are dazed by these large figures and naturally ask: Has the thing uot beeu overdoue? Is there uot danger of another immediate collapse and pauie? Perhaps there might be were it not that the bulk of this railroad building is going on in the West, where lines can be constructed much eheaper than in the East, and where the right of way is generally given. It is interesting to watch the friendly competition of the great trunk lines to secure possession and control of the country beyond the Missouri river. This rivalry promises within a half a dozen years to give us as many through lines to the Pacific. Unquestionably the western railroads in the matter of polite attendance, comfortable coaches, eating aecommodations, etc., etc., surpass the eastern lines. The Chicago and North Western, for example, make travel a pleasure rather thau a burden, whether the passenger he going from Chicago to Marquette, St. Paul, Omaha, or to Northern Iowa, and Dakota. We might name other Western roads whose management our Eastern lines could pattern after with decided advantage to the travelling public.

The American Agriculturist in the West.

Two of the proprietors of this journal have for weeks been travelling through the Western States and Territories, visiting various points of agricultural interest and gathering a vast fund of information for our readers. It is our purpose to have one or more of our representatives constantly on the move in the future through all the great agricultural regions of the West and the Northwest. In addition we have secured the services of leading local writers, who will contribute valuable information regarding their respective States aud Territories.

It will thus be seeu that we inteud in the future to make the *American Agriculturist* specially adapted to the wants of the West. Those therefore of our vast army of readers who have moved and who are moving westward, cau continue to subscribe to the *American Agriculturist*, feeling that it will consult their wants and their needs in their new homes.

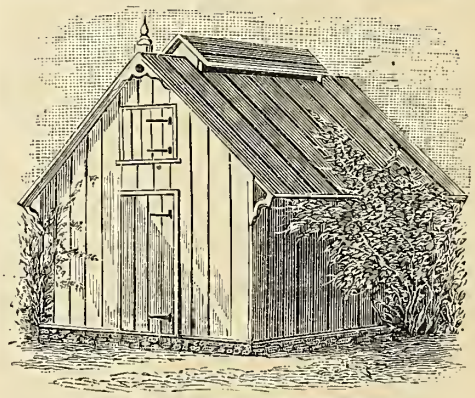
We invite all old subscribers who, upon moving West, have dropped the paper under the impressiou that it was specially an Eastern journal, to again become subscribers and learn that the old favorite paper is just as useful and instructive to them now as when they resided in the Eastern States.

Agricultural Lectures in Illinois.—During its winter term—eleven weeks, from Jan. 4—the College of Agriculture of the Illinois Industrial University will receive as special students those who desire to attend one or all of the following courses of daily lectures: General Farm Management; Animal Husbandry; Diseases of Animals, and Elements of Horticulture. The largest agricultural library in the West will be open to students. The Annual Agricultural Institute, to which all are invited, will be held the last week in January.

Provide for Next Summer's Ice.—It can be Very Cheaply Done.

Ice is now indispensable to good, successful dairying, even on a small scale, where cool spring water is not abundant. The preservation of food, and the less frequent cooking required, and consequent saving of fuel, will go far towards meeting the expense of providing ice, if it do not more than cover it. This last is of itself an important item on the prairies or wherever fuel is scarce.

There are few farms so small that it will not *pay* to provide for a supply of ice; and it is quite practicable for several small families to combine, and store a lot to be drawn upon hy each. A fresh water lake, pond, or stream, is not indispensable for obtaining ice. In the absence of natural resources, an artificial bed can be made by excavating the soil a foot or less, or by euclosing an area with a small bank of earth. A thin grouting of hydraulic lime,



A CHEAP ICE-HOUSE ORNAMENTED.

spread thinly over the bottom and against the sides will hold the water until it freezes an ice flooring. Small additions of water daily or oftener in cold weather will soon give a thick mass of ice. Straw may be thrown over during a hot mid-day, or a temporary thaw. This water may be drawn from cisterns, or wells. Every four small hogsheads of water (63 gallons each), will give over a ton of ice, or 2,105 lbs.—Even on the prairies, there are generally frequent sloughs which can be utilized for au ice pond with little trouble and expense.

A Straw Heap for Keeping Ice.—Last summer a "Prairie Farmer" informed us that he dammed a slough, and took out some 25 loads of ice and piled it up closely on a dry spot. He then covered it with several feet in thickness of wheat straw which would otherwise have been "burned to get rid of it." The heap was sloped to shed most rain, and some boards and weighted fence wire put on to keep it from blowing away. About once a week, one side of the heap was opened, a week's supply of ice taken out, and the opening closed by ramming in straw. He had plenty of ice left near the close of August. The ice removed was kept in a large double box, with ten or twelve inches of dry wheat chaff between the outer and inner box. It stood in the shade on the north side of the house, with some straw thrown over it to ward off the morning and evening sun. His labor he did not reckon. The total outlay was less than $4 for rough boards and nails to make the box.

An Ice-House that will keep a large supply of ice is a small matter. We have described several that cost only $20 or $30 all complete, which hold 20 tons of ice, and are serviceable for a dozen to a score of years. This is equal to 217 lbs. a day from

May 1 to Nov. 1. A variety of Ice-Houses, simple and cheap, as well as more expensive ones, are described in the recently issued book on "Barns and Out-Buildings," advertised elsewhere. Iu the September *American Agriculturist* for 1880, we described a very good one costing less than $30, built by a farmer (C. H. Warner, of Lima, N. Y.), whose ice cost him less than 50 cents a ton, interest and wear of the house aud putting in the ice included. A New Jersey subscriber sends us a sketch of one very similar, indeed patterned after Mr. Warner's, of which we present an engraving herewith. It stands on level ground, and he has planted shrubby trees around it, partly for sbade and partly for ornament. Some of these are shown. This house is 12 feet square, with sills and plates 8x8 inches, of hewn logs, and 8x8-inch corner posts, 8 feet high. Studding is set in as needed. Rough (or planed) hoards are nailed horizontally within and perpendicularly without, and the cracks battened with narrow strips. The wall space is filled with sawdust. Dry wheat chaff might be used in the absence of sawdust. The roof is of single boards, with a ventilating opening at the top. The doors are single, with short cross boards inside to hold the ice up. The ice is packed in solid, except a space of 6 or 8 inches all around filled with sawdust. When full, a foot or so of sawdust is put on top of the ice. The flooring is of inch boards laid on a bed of cohble stones. More minute directions, if desired, can he found in the number above named.

Wood as Fuel.

Weight and Heating Power of Different Kinds Compared, etc.—Some Practical Lessons.

More fuel is reqnired during January than in any other month in the year, and a few items may be interesting as well as useful. Another article ("Keeping Warm") describes the production of heat. Carbon (pure coal) is the chief source of all heat used for domestic purposes and for driving machinery by steam power. This carbon is mainly derived from wood, hard coal, and peat. Coal is most used for producing steam power, but taking the whole world together, wood is much the most extensively used fuel. Por the present purpose we may consider all wood as essentially composed of carbon or charcoal, and water (mainly as sap). All woods heated away from the air yield watery vapor, chiefly, leaving nearly pure charcoal, which when burned leaves more or less mineral matter as ashes. Of green wood one-third to one-half or more of its weight is water, partly depending upon the time of cutting. In Schüller's experiments—

100 *lbs.*	Cut in January.	Cut in April.
Ash Wood contained	29 lbs. water..	........38 lbs. water.
Sycamore "	33 " "	..........40 " "
White Pine "	52 " "	..........61 " "

A practical lesson for this month is here indicated. All kinds of wood cut in January contain from 15 to 25 per cent less water than after the sap is in motion in April; and considerable earlier in the southern portion of the country. It is well to now cut down the trees designed for fuel, even if working them up is delayed to the following months.

As wood seasons naturally in the air, it loses one-sixth to one-third its weight of water, but still retains one-seventh to one-fourth its weight of moisture. A considerable part of the latter may be expelled by kiln-drying, and most of it if the kiln heat be raised to 212°, or boiling water temperature. Some careful tests made by one of our Western readers showed that *five* cords of Beech and Maple just cut weighed as much as *eight* cords of the same wood when thoroughly air seasoned. The above teaches

Two Important Practical Lessons.

First.—To haul and handle green wood requires a very large waste of strength. In handling five cords of green beech wood for example, we have loaded, hauled, and unloaded, three or more tons of useless water, which a few month's seasoning would have removed.

Second, and still more important: When wood not thoroughly seasoned is used for fuel, its water or sap must be expelled before its carbon comes into play to produce heat. This takes place gradually on the outside, or on one side, as little of the carbon comes into action at a time. But as stated in another article, tbe eseaping vapor conceals or carries off a very large amount of heat, sometimes almost enough to use up all the heat produced by its carbon. It is safe to say that on the average, a cord of green wood will not supply for use one half as much heat as would be yielded by the same wood after thorough seasoning.

A cord of wood is 128 cubic feet as it lies piled up. The dimensions of a cord is usually 4 feet high, 4 feet wide, and 8 feet long, ($4\times4\times8=128$). 4 feet high, 3 feet wide, and $10^2/_3$ feet long make a cord ($4\times3\times10^2/_3=128$). But allowing for the interstices in fairly piled wood, we may reckon a cord to actually contain about 72 cubic feet of solid wood.

Thoroughly dry wood weigbs about as follows:

Pounds.	*1 cubic ft.*	*1 cord.*	*Pounds.*	*1 cubic ft.*	*1 cord.*
Hickory	62 lbs.	4,464	Soft Maple	37 lbs.	2,664
White Oak	53	3,816	Wild Cberry	37	2,664
Wbite Ash	49	3,528	White Elm	36½	2,628
Red Oak	45½	3,276	Butternnt	35½	2,556
White Beech	45	3,240	Red Cedar	35	2,520
Apple Tree	43	3,096	Yellow Pine	34	2,448
Black Birch	43	3,096	Wbite Birch	33	2,376
Black Walnut	42½	3,060	Cbestnut	32	2,304
Hard Maple	40	2,880	White Pine	26	1,872

The average amount of *dry charcoal* obtained from a Cord, by careful experiments ranged as follows:

Hickory	1,172 lbs.	Hard Maple	617 lbs.
Wbite Ash	888 lbs.	Black Birch	604 lbs.
White Oak	826 lbs.	Chestnut	590 lbs.
Apple Tree	779 lbs.	Yellow Pine	585 lbs.
Black Walnut	687 lbs.	Wild Cherry	579 lbs.
Wbite Elm	644 lbs.	Soft Maple	551 lbs.
White Beecb	635 lbs.	Butternut	527 lbs.
Red Oak	630 lbs.	White Pine	455 lbs.
Red Cedar	624 lbs.	Wbite Birch	450 lbs.

Numerous tests have been made with different kinds of wood to ascertain how long one pound of each would, in combustion, maintain 10° of heat in the same room. These ranged from 6 hours for Butternut, Soft Maple, and White and Black Birch, up to 6 hours and 40 minutes for Hickory, Ash, and Apple. The variation is less than would be expected, but in this case, each kind of wood is taken thoroughly dry, so that the experiments are essentially the result of burning au equal amount of charcoal from different woods.

Relative Value of a cord of various seasoned woods, taking into account weight, heating power, etc., and calling Hickory wood worth $5 a cord:—

Hickory	$5.00	Black Walnut	$3.25	Soft Maple	$2.70
Wbite Oak	4.05	Black Birch	3.15	Yellow Pine	2.70
White Ash	3.85	Hard Maple	3.00	Cbestnut	2.60
Apple	3.50	Wbite Elm	2.90	Butternut	2.55
Red Oak	3.45	Red Cedar	2.80	White Birch	2.40
W'te Beech	3.25	Wild Cberry	2.75	White Pine	2.10

We find no record of careful experiments to test the relative value of two woods extensively used in some parts of our country viz., Cottonwood and Basswood or Lindeu. Tbc Hickory uamed above is what is known as the Shell-bark Hickory (*Carya alba*). The "Pig-nut Hickory" (*Carya porcina*), is of nearly equal value. The "Western Hickory" (*Carya sulcata*) weighs about 25 per cent less than the Shell-bark, and its relative value per cord is estimated at $4.05, or the same as White Oak.

In travelling on the upper Missouri where Cottonwood is the chief fuel obtainable, with occasional supplies of Ash, we found the experienced steamboat men would take on Ash wood at $3 to $3.50 per cord in preference to Cottonwood at $1.75 to $2.50. They also, when obtainable, tried to keep some Ash on hand to get up greater steam-power when having to ascend partieularly rapid currents in the river.

Information About Southern States.

Various pamphlets and other documents are issued from time to time with a view to attract settlers to the Southern States. Some few of these are published by State authority, others by land companies, and still others by individuals who act as Real Estate Agents. The publications of the last named sometimes remind us of the glowing descriptions of Martin Chuzzlewit's Eden, but taken as a whole, these documents need not mislead, and are useful to intending settlers. We have several papers ou the Resources and Capabilities of Texas, by Col. Wm. W. Lang, of the Southwestern Immigration Company, one of wbich gives a very useful map, and what appears to be a fair aceount of that immense State. The most valuable publications of this kind, because made with no other object in view than to present the facts, is a pamphlet on the Climatology of Florida, by our old friend and correspondent, Dr. Charles J. Kenworthy, of Jacksonville, Prest. Florida Medical Association, etc. This was originally a paper presented to the Florida Medical Association, which caused it to be published, with matter added by the author, for distribution. Probably few persons know Florida from one end to the other better than Dr. K., who has visited nearly every point on both shores in his yacht, and explored its many streams and lakes in every direction. With all the zeal of a sportsman he has gone over every part of the State, making observations as a man of science. The result is a pamphlet of 70 pages, full of information of the greatest value to those who look towards a residence in Florida for the benefit of their health. Made by a medical man to a body of his medical brethren, it is entirely unbiased by any local influences, and gives just the information needed, not only by those who seek for a suitable place in whieh to settle, but by physicians who advise their patieuts to go to Florida. The pamphlet does not indicate how it may be obtained, but we suppose it may be had at the Jacksonville book stores.

For Land Seekers and Emigrants.

The February number of the *American Agriculturist* will contain an illustrated article on the various land grants in the West, Northwest, and Southwest, whieh invite emigration. It will be from the pen of Mr. David W. Judd, who has been visiting these large tracts of lands with a view to procuring just such information as those of our readers may require who contemplate moving westward, and either purchasing or locating (under government acts) lands along the great railway thoroughfares which are so rapidly opening up the country. The article will be published in German as well as in English, with a view to extensive distribution in Europe. Those desiring extra copies of the paper to seud to their friends, would do well to order them in advance.

Weeds.—Many years ago the writer was requested by the late Dr. Darlington to revise his "Agricultural Botany," and it appeared with the title of "American Weeds and Useful Plants." Out of regard to the venerable and beloved author, his original plan of the work was followed in the edition. This plan is less popular than is desirable, and in a measure deprives it of its usefulness. Since that edition was published, many new plants have made their appearance as weeds, and the writer has for some time beeu aware that the work must either be revised or be replaced by a new one, and he has been for some years collecting materials for the purpose. He would ask the aid of the readers of the *American Agriculturist*, who can greatly assist by reporting the recent advent of any new weeds, or the invasion of cultivated grounds by plants not before considered as troublesome. While in the older States nearly all the weeds that annoy the cultivator are introduced from abroad, this is not so generally the case in the newer States of the Far West, where the indigenous growth is often troublesome. We will be glad of information from any quarter upon the weeds of the farm and garden, and would especially call attention to the agressive grasses which, in some localities, injure meadows and pastures and lawns to a great extent without at first arresting attention. The assistance of friends on the Pacific Coast, whose growing season begins while it is mid-winter on the Atlantic slope, is especially asked. Specimens are desirable, and it is not necessary, as many suppose, that they be sent in the fresh state. If first dried between the folds of a newspaper,

under pressure, or between the leaves of a valueless book, they will reach us in a much more useful condition than if packed in a box with moss.

Fatality Among Lambs.—J. F. Ferguson, Lapeer Co., Mich., writes in substance:—"I separated my lambs from the ewes on September 28th. They have been salted weekly and were watered from a well, but would not always take water. I salted them on Saturday, and at 9 o'clock on Sunday morning found five of them dead, with several others suffering greatly. They are taken with a severe chill, and fall down, straining, throwing the head far back; they breathe rapidly, froth at the mouth, and die in about an hour, a bloody slime coming from the nostrils after death. The same disease appeared about three years ago on another farm, where out of 100 I lost 20."—This letter was referred to Prof. A. Liautard, of the American Veterinary College, from whose reply we extract the following:—"The symptoms and all the conditions taken together point to a form of *Anthrax*, a blood poison, due to the presence of *bacteria* in that fluid. If post mortem examinations, which should be very carefully made, show the spleen to be much enlarged, there will remain no doubt as to the nature of the disease. The disease proceeds so rapidly that there is little to be hoped from medical treatment. The better way is to at once remove all the well animals to some other locality, allow plenty of rich food and pure water. All dead animals should be buried deeply and covered with a layer of quicklime. It would be better, if practicable, to burn the carcasses. The barns, sheds, or other buildings in which they have been kept, should be well disinfected, first removing the bedding and manure, which should be burned or thoroughly mixed with quick-lime."—*Anthrax* is described in an article by Prof. Liautard, in October last, p. 393.

Feed for Laying Hens.—A correspondent asks: "Can hens be made too fat to lay?"—Yes indeed. Fat hens rarely lay. If hens are fed so much or so often that they begin to fatten rapidly, they will soon stop laying. He asks again: "Is there any thing better than corn to make hens lay?"—No food is better than Indian corn or ground corn (Indian meal), to fatten hens, and of course it should be fed sparingly to laying hens. If hens do not lay and are fat, feed them but once a day—at evening just before they go to roost—giving wheat screenings, buckwheat, and oats, in such proportions as you judge best. Throw the feed upon clean ground only so fast as they pick it up. Stop just as soon as you see any of the flock begin to wander away. Let them forage all day for weed seeds, grass, insects, etc. They must have warm quarters, well ventilated at night, and a sunny run by day in winter. After a while begin to feed them sparingly a little meat scrap chopped fine, broken bones, oyster shells, etc., and they will probably soon begin to lay.

Remedy for Side Hole in Cow's Teat.—Mr. "W. T. C.," Monmouth Co., N. J., writes: "I have a valuable young cow with a hole in the side of one of her teats. How can it be successfully treated?"—Make the edges of the opening "raw" with a sharp knife, or cauterize with a pointed stick of nitrate of silver. The hole may then be closed with strips of adhesive plaster, or better yet by a coating of "collodion," which can be obtained of any photographer, if the nearest druggist does not keep it. In milking be careful not to displace the dressing—and it will perhaps be better to draw the milk with a tube for several days. If the opening in the teat is not quite small, it may be necessary to close it by a stitch just through the skin with a fine thread. In most cases the scratching of the edges of the opening with a knife and the application of collodion will, however, be sufficient.

Roots in a Drain.—Mr. G. W. Finley, Allegheny Co., Pa., finding a 3-inch terra cotta waste pipe obstructed, drove some nails crosswise in a long slat, and with it drew out a tuft of roots. The specimen sent us is about 30 inches long, and like rather coarse auburn hair, so fine are the fibers. Mr. F. thinks it is the root of an Elm, or a Silver Poplar, both of which grow near by, and suggests carefully cementing the joints of such pipes to keep out roots. Such obstructions are far more frequent in tile drains than is generally supposed. In laying pipe drains near trees great care should be taken to so adjust the ends and the collars, that a small root can not enter.

Irrigation.—Several who inquire as to the practicability of irrigation in their localities are informed that the work by Henry Stewart, "Irrigation for the Farm, Garden and Orchard," (Price $1.50), discusses the subject in full. Where the natural conformation of the land will allow, storage reservoirs may be made to collect the rain-fall of a large area and preserve it for use. A correspondent in Indiana, who properly objects to the Hydraulic Ram, on account of the waste, and wishes power for other purposes, should look at the various steam engines advertised.

A Recipe for Omelette.—"Aunt Mary," Carlinsville, Ill., sends her method of making an Omelette, which she thinks is better than any she has seen in print. To six eggs, take one cup of milk; put a slice of bread in the milk and mash fine. Cut fine some cold ham, and place it in the frying pan. Beat the eggs thoroughly, mix them with the milk and bread and turn upon the ham when that is hot. When brown on the underside, set for a while upon the upper slide of the oven, and when done turn out on a plate and serve. It will not fall but be light even when cold, while omelettes made with flour will fall, unless eaten very hot.

Osage Orange from Cuttings.—"E. O.," Billings, Mo., writes that he has been told that an Osage Orange shoot, if buried, will throw up a sprout from nearly every bud, and asks why this is not the quickest way to make a hedge. The Osage Orange grows readily from cuttings, both of the branches and the root, but experienced hedgers use only plants raised from seeds. The labor of making the cuttings is much greater, but the great objection is the lack of uniformity of the plants thus raised. In setting a hedge it is important to use plants as nearly alike as possible in size and vigor, else those that have a slight advantage at first, in size and strength, will keep it, crowding the weaker, and preventing that uniformity so desirable in a complete hedge. For this reason the first step with hedge plants, when they are taken up in the fall, is to carefully assort them and tie in bundles, so that in planting those in any part of the hedge will be as much alike as possible. If a dozen cuttings were raised from a shoot they would be very much unlike; those from the terminal bud, and a few other buds nearest the top would be much more vigorous than those from buds lower down, and some of them would be of such slow growth as to be unfit for planting in a hedge. We comply with our correspondent's request in asking that any one who has made a successful hedge from cuttings will report it and his manner of procedure.

Tobacco as a Window Plant, is recommended by a correspondent of an English journal. It certainly has much to commend it; its broad, green leaves, and stately habit, while, should it flower, its abundance of bloom would be showy, and continue long. The tobacco stores often have it as a sign, which shows that it will endure neglect.

What is a "Molly?"—The English market measures are confusing enough to a stranger. They have sieves, and punucts, and pottles, and now we learn from "Gardener's Chronicle" that peas are "scarcely ever sent in 'mollies'—3 pecks."

A Change in Wheat.—Our correspondent, J. L. Mustard, Washington Co., Pa., who makes many experiments with grain, gives an account of one with wheat. He procured a peck of "Russian Black-beard" wheat, and twelve heads of the same showing black chaff and heards. Before sowing he shelled out these heads, and mixed the grain from them with the peck, and sowed the whole. When ready to cut, all the field had the whitest heards he ever saw upon wheat, not a single black beard could be found, though the grain itself was precisely like that which was sown. He knows that at least the grain from the twelve heads had black heards, and he is in doubt whether these grains all failed to grow, or whether the chaff and beards changed from black to white. We think the latter the probable explanation. A black color upon chaff and beards is unusual, and may be due to some peculiarity in the soil where the wheat grew. Being sown where this local influence did not exist, the chaff returned to its usual color.

Rosa rugosa as a Standard.—We have now and then said a word in favor of the Japanese rose, called in Japan the Ramanas Rose, and known to botanists as *Rosa rugosa*. Its foliage is so rough and firm, that it repels the insects that attack ordinary roses; its flowers appear through a long season, and though single have the purest and strongest rose fragrance, while its very large hips, of the most brilliant scarlet, make it nearly as brilliant in fruit as in flower. We have grown this rose in the bush form, but the "Gardener's Chronicle" states that it has seen it trained to a single stem, as a standard, and very effective in fruit against a background of evergreens. We can readily understand the superior beauty of this, one of our favorite plants, in the form of a standard, and hope to try it next season.

Rain-Gauge.—A number of our friends have asked us how they can make a rain-gauge that will not cost much, and will be fairly accurate. If any of our readers can help in this matter, we hope they will do so and describe any rain-guage that they may have found useful. In the meantime, we will work at "this end of the line," and, out of all, we hope something useful may come.

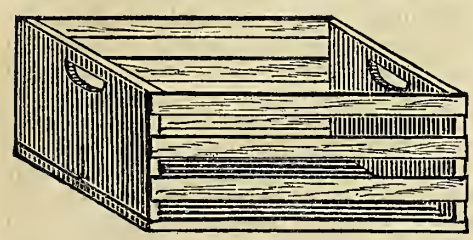
A Scraper and Mud-Mat should be at the back door, or that by which the men folks enter, of every farm house. Even if there is a rear porch, and those who enter find a place to change their boots for slippers, the boots that are now outside should be cleaned. A scraper is easily made of a piece of hoop iron, so fixed that its edge may be used to remove the most of the mud from the soles, leaving the finishing to the mud-mat. Strips of wood, in the form of a blunt triangle, may be strung together by a cord, using a knot if need be, to keep them sufficiently apart. Strips placed in this way will present a blunt edge uppermost, and help remove what the scraper does not take off. A useful mud-mat may be made of a strip of plank, bored with inch auger holes, and corn husks (shucks) pulled into the holes and made fast with pins of wood driven in from below. A mat of this kind will greatly aid the housewife in keeping out that which is known by the comprehensive term, "dirt."

"Four Bovine Scourges," is the title of an ample quarto, by Thomas Walley, M. R. C. V. S., of Scotland, which treats of the four leading, and most destructive cattle diseases. Pleuro-pneumonia, Foot and Mouth Disease, Cattle Plague, and Tubercle or Scrofula, are the diseases classed as scourges, and they are treated by one of the most eminent veterinarians of Great Britain. These diseases being discussed in full, and illustrated by colored plates showing their effects upon various parts, the work is one of great value to all practitioners of veterinary medicine and others interested in these diseases. Price $9, post-paid.

The Prophet Without Honor.—In beer-drinking Germany, it is said that the favorite kind of this beverage in any given town, is always that which is made somewhere else. The use of the thermometer also illustrates the same fact, that the prophet is without honor in his own country. In England and America the scale in use is the invention of the German, Fahrenheit. In Germany, on the other hand, the scale of Reaumur, a Frenchman, is used. In France, of all places, we should expect to find a French scale, but the Centigrade used there was invented by a Swede, one Celsius.

A Bushel Box.

Mr. "R. H.," Orange Co., N. Y., makes a box in the following manner that holds just a bushel:—Cut a 12-inch pine board in foot lengths; these make the ends of the box, as shown in the engraving, made from Mr.



"H.'s" sketch. The sides and bottom are made of strong lath 18½ inches long and securely nailed to the end pieces. These boxes can be packed closely and are handy for harvesting and marketing potatoes, apples, etc.

A Lesson in Agricultural Chemistry—Something About Nitrogen.

BY PROF. W. O. ATWATER, WESLEYAN UNIVERSITY, MIDDLETOWN, CONN.

Chemistry tells us that air is composed mainly of two gases, *Nitrogen* and *Oxygen*. Each of these, like the air which they together make, is colorless and invisible. We can not see them, yet we feel them in every breeze, we breathe them in every breath, without them we should die. Air has weight. The atmosphere presses down upon the earth with a force of about 15 lbs. per square inch, or nearly 5,000 tons per acre. Four-fifths of this weight is nitrogen and one-fifth oxygen. Over every acro of land, then, there are nearly 4,000 tons of nitrogen and 1,000 tons of oxygen. The oxygen is the active, and the nitrogen the inactive element of the air. To make a fire burn, we provide a supply of air. It is the oxygen that supports the combustion. Close the draft, and as soon as the oxygen is used up the fire goes out. Nitrogen remains, but it cannot sustain tho flame. We breatho air to support life. Here again oxygen is the efficient agent. The nitrogen dilutes the oxygen. In an atmosphere of pure oxygen respiration would be too active, but in one of pure nitrogen we should suffocate. And if we are in a perfectly close room we speedily consumo the oxygen, and unless fresh air with its oxygen were supplied we should die.

Where Nitrogen is Found.

Everywhere, then, where air is, there is nitrogen. Not only in the atmosphere as it surrounds the whole earth, but in the waters of springs, streams, and the ocean which dissolve air and hold it, and in the soil which the air likewise permeates, does the aerial nitrogen occur. But there is a great deal of nitrogen besides that in the air. Nitrogen forms a part of every plant, from the grass to the oak, and is in every organ, in root, stem, leaf, flower, fruit, and seed. It occurs in the body of every animal, and in every part of the body. Neither plants nor animals could live or even exist without it. It is an essential element of all our foods, and the costliest component of fertilizers. Its compounds are in earth, and air, and sea; in every fertile soil; indeed no soil could be fertile without them.

Free and Combined Nitrogen.

I have just spoken of compounds of nitrogen, and ought to explain the difference between nitrogen in the free or uncombined state, and in compounds. The nitrogen that makes up the bulk of the air, is in what chemists call the free state. The minute particles, atoms, as they are called, are not united to those of any other element, they exist by themselves. But they are capable of combining with other elements to form compounds. Thus an atom of nitrogen unites with three atoms of hydrogen to form a compound called ammonia, and two atoms of nitrogen combine with five atoms of oxygen to form a compound called nitric acid. So long as the nitrogen remains free, neither plants nor animals can make the most complete use of it, but in its compounds it can be directly used as food by both animals and plants. And the compounds of nitrogen are employed in a great variety of ways to supply the wants of man.

Compounds of Nitrogen.

The nitrogen compounds that are of most importance in daily life may be divided into three classes: Ammonia, Nitrates, and Organic Nitrogen Compounds.

AMMONIA.—We know very well the intensely pungent odor of ammonia water, "Spirits of Hartshorn." This is due to ammonia. Ammonia is, like nitrogen, a colorless, invisible gas. It is composed of two gases, nitrogen is one, the other is hydrogen, tho gas which, combined with oxygen, forms water. Ammonia is formed when nitrogenous matters decay. We often find a strong smell of it in the stable and around the out-houses. Very minute quantities occur in the air, and we have it in concentrated forms, in smelling salts, Sal Ammoniac, and in Sulphate of Ammonia, which is so much used for a fertilizer.

NITRATES.—NITRIC ACIDS.—I have just said that two atoms of nitrogen may unite with five atoms of oxygen, and that the compound is called Nitric Acid. But the latest chemical theory requires that some water should be added to this to make the true nitric acid. This is in fact the case with the nitric acid which we buy of the apothecary as *aqua fortis*. If we take nitric acid and put soda with it, we get nitrate of soda, or soda saltpeter, as it is sometimes called. The nitrate of soda that is so much used for a fertilizer is an impure material brought by thousands of tons from Peru and Chili. Ordinary saltpeter, or "nitre," is a nitrate of potash, that is, it consists of nitric acid and potash. Nitric acid in the soil combines with lime, making nitrate of lime. In this form nitrogen is leached out of the soil by water, carried beyond the reach of tho roots of the plants to streams and the sea, and thus the precious element is lost to vegetation. The loss of fertility which soils suffer by the washing away of nitrates is incalculable.

ORGANIC NITROGEN COMPOUNDS.—Nitrogen in ammonia, nitrates, and other forms, is gathered by plants from soil and air, and used by them as food. When it gets into the plants, it undergoes wonderful changes. It combines with other elements, carbon, oxygen, hydrogen, and so on, and these compounds are stored away in the different parts of the plant. Thus we have in wheat, the gluten, that boys like to chew in "wheat gum." There are a great many such compounds in plants. Many of them are eaten by animals and are stored away in their bodies. The lean meat, skin, and connective tissues of our bodies, the albumen, white, of eggs, and the casein or curd of milk are nitrogen compounds, and are formed from similar compounds in plants. Now, the gluten of wheat, the casein of milk, the albumen and the fibrin of meat, and so on, are called organic compounds, and their nitrogen is organic nitrogen.

The Nitrogen of the Atmosphere.

Wo have already learned that four-fifths of the air is nitrogen, in the free state. The atmosphere also contains combined nitrogen, ammonia, nitrates, etc., but the quantities are extremely minute. Rain, snow, and dew bring nitrogen compounds to the soil, but in quantities so small as to do but little toward enriching it. That is to say, the amount of ammonia and nitrates brought to the soil in this way in a year would be only a small part of what an ordinary crop would need, but in the course of a number of years quite a quantity might accumulate. Some chemists hold that the free nitrogen of the air is assimilated by the soil, but this is doubtful.

The Nitrogen of the Soil.

The nitrogen of the soil comes partly from the atmosphere and partly from vegetation, from the plants which have grown and been left to decay in it. The soil contains very little ammonia or nitrates. Nearly all its nitrogen is in the more complex form of organic nitrogen. But the nitrogen in the soil is undergoing continual change. The organic nitrogen is altered, by "nitrification," to nitric acid, and this nitric acid, unless seized upon by plants, is sooner or later carried away by water, and lost to vegetation.

Nitrogen in Fertilizers.

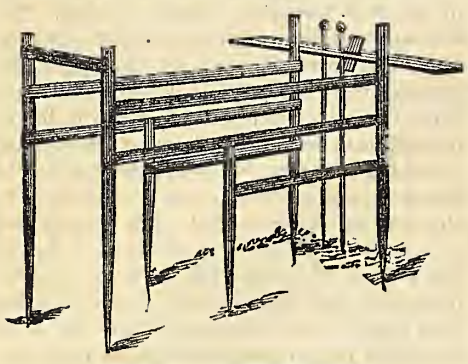
Natural manures, dung, urine, etc., contain scarcely any nitric acid, and but very little ammonia. Nearly all the nitrogen is in the form of organic nitrogen. It occurs as organic nitrogen likewise in most of the artificial fertilizers, as bone, dried blood, meat scrap, fish, leather-waste, and in the "ammoniated" phosphates, in which these are used to supply the nitrogen. Peruvian guano contains considerable ammonia, but the larger part of the nitrogen is in organic compounds. Indeed in all ordinary nitrogenous fertilizers, except nitrate of soda and sulphate of ammonia, the bulk of the nitrogen is organic nitrogen.

What Forms of Nitrogen do Plants Use for Food?

Plants can take their nitrogen as ammonia, as nitric acid, and as organic nitrogen. They seem to prefer nitrates and ammonia. The number of organic nitrogen compounds which they are able to digest, so to speak, is limited. Practically the larger part of the nitrogenous food of plants seems to consist of the nitric acid which their roots gather from the soil. This nitric acid is derived mostly from the decay of vegetable and animal remains in the soil, though part comes from the atmosphere in the forms of ammonia and nitric acid. The inert nitrogen compounds, which, until changed, are useless to the plant, are gradually altered by the process of nitrification above referred to, and finally reach the condition of ammonia and nitric acid, the forms which plants prefer. And not only is the vegetable matter of the soil thus worked over for the use of plants, but animal refuse, dung, guano, and the various materials used for fertilizers, including even ammonia, are transformed by nature in that wonderful laboratory which we call the soil, and made into the compounds best fitted for the plant.

A Nursing Pen for Sheep.

Mr. W. W. Wheeler, Arlington Hights, Cook Co., Ill., sends us a sketch of a pen for confining a sheep that will not own her lamb. The sheep is secured by two smooth stakes driven into the ground and brought sufficiently near together, and then fastened by a wedge in a cross-piece, as shown in the accompanying engraving. The framework which surrounds the sheep is of light material, and of the form shown above. The sheep can be prevented from lying down by putting a stick upon the top of the lower bar.



A PEN FOR A NURSING SHEEP.

Rotation of Crops and Manures.

BY DR. M. MILES, DIRECTOR OF EXPERIMENTS, "HOUGHTON FARM," ORANGE CO., N. Y.

In summing up the advantages of a systematic rotation of crops, the supply of manure that can be obtained in the residual produce of the feed provided for animals in the course of cropping, and the ultimate profits that may be derived from the manure when applied to the soil, must not escape attention, as they are matters of great practical importance. From the wide variations observed in the action of farmyard manures on different soils, we cannot decide upon any standard that will enable us to determine their absolute value, in promoting the growth of crops in any given case. For example, a dressing of manure on a heavy soil would not produce precisely the same results that would be obtained by the same manure on a light soil, and the different effects observed in the two cases would be still further complicated by variations arising from peculiarities of seasons. The direct method of experimentation for determining the absolute value of manures, which would at first sight be suggested, cannot, therefore, from the complex conditions involved, be applied with any prospect of success.

Fortunately, however, the results of carefully conducted feeding experiments, and particularly those made by Messrs. Lawes & Gilbert, at Rothamsted, enable us to calculate the quantity of each of the most valuable constituents of the manure obtained from a known amount of feed consumed by animals on the farm, and as the market value of these substances can be readily ascertained, the relative value of farmyard manures can be determined with sufficient accuracy for all practical purposes. This method of ascertaining the relative value of manures, is not, as many suppose, a purely theoretical process, but is based on the results of accurate and conclusive experiments.

Plants are composed of some fourteen different elements, that enter into their composition in various proportions, but as only three of them, viz., Potash, Phosphorus, and Nitrogen—are likely to be deficient in the supply of food furnished to plants in any ordinary soil, we need not concern ourselves with any other chemical elements in estimating the composition and relative value of farmyard manures. It may then be said that the value of manures depends, in the main, on the amount of Potash, Phosphoric Acid, and Nitrogen, they contain, in an available form for plant growth.

From the experiments referred to it has been ascertained that, on the average, less than ten per cent of the Nitrogen of concentrated foods like the grains, and rather more in the coarser products like straw, are retained by the animal in the peculiar work of its organization, and that the remaining nine-tenths appears in the manure. Of the Potash and Phosphoric Acid of the food, but a very small proportion is retained by the animal, and practically it may be said that it nearly all appears in the manure. Growing animals, or cows giving milk will of course retain a slightly larger proportion of these valuable constituents of the manure than store stock, but in estimating the relative value of manures, these slight variations may be safely neglected.

The following Table (1), showing the value of the manure produced by feeding one ton of the articles named, is based on their average composition as shown by analysis, after making liberal deductions for the amount of Potash, Phosphoric Acid, and Nitrogen retained by the average animals of the farm:

TABLE 1.

Kind of Feed.	*Value of manure from 1 ton of Feed.*	*Kind of Feed.*	*Value of manure from 1 ton of Feed.*
Indian Corn (35¼ bu.)	$6.96	Peas (31¼ bu.)	13.00
Corn Stalks	3.31	Pea Straw	4.56
Oats (62½ bu.)	6.93	Beans (31½ bu.)	15.05
Oat Straw	2.24	Bean Straw	7.61
Wheat Straw	1.69	Turnips (34 bu.)	.95
Clover Hay	8.84	Turnip Tops	1.20
Timothy Hay	5.94		

About twenty years ago Dr. J. B. Lawes made a similar table of manure-values of cattle foods, which he republished with slight changes and additions in 1875. The values in the present table are generally lower than those given by Dr. Lawes in his revised table; but his values are for "long" tons, which are not used here, and I have perhaps allowed a slightly wider margin for nutritive materials retained by average farm stock, besides using a lower scale of prices. The claim of absolute accuracy is not made for the table, but it represents a close approximation to the average of results that may be accepted as sufficiently accurate for estimating relative values.

In using these data in relation to our present subject, it will be more convenient to compare the value of the manures produced per acre in different rotations. For this purpose Table 2 has been prepared, in which the value of the manure per acre in the crop itself has been calculated on an assumed yield of each crop, as stated in the first column:

TABLE 2—SHOWING VALUE OF MANURE PER ACRE.

Crop—Assumed Yield and Manure Value.			*Total Estimated Value of Manure for Crop of 1 Acre.*
Corn, 50 bu., value of manure		$9.37	
" Stalks, 2½ tons, " "		7.45 —	$16.82
Oats, 45 bu., " "		5.02	
" Straw, 1½ tons, " "		2.80 —	7.82
Wheat Straw, 1½ tons			2.11
Clover Hay, 2½ tons			19.89
Timothy Hay, 1½ tons			8.91
Peas, 25 bu., value of manure		$10.40	
" Straw, 1 ton, " "		4.56 —	14.96
Beans, 25 bu., " "		12.04	
" Straw, 1 ton, " "		7.61 —	19.65
Turnips, 600 bu., " "		17.10	
" Tops, 4 tons, " "		4.80 —	21.90

The table will show that the value of the manure made upon the farm will be largely influenced by the crops grown for cattle food.

In a former article we called attention to the influence of crops like peas, beans, and clover, upon the grain crops that immediately followed them. We found these leguminous crops, although freely using Nitrogen for their own growth, still left the soil in good condition for growing large crops of grain. But this is not the only advantage to be derived from these leguminous crops when raised and consumed on the farm, for we see from the above tables that their manure-value, when estimated either by the ton or per acre, is much above that of several other staple crops. Our Indian Corn, the king of cereals, stands high in the list in the production of manure per acre, and it is therefore, from this standpoint, of great value in keeping up the fertility of the farm. Its direct influence upon the soil, in its growth and development, has not as yet been determined. As a hoed or "cultivated" crop, it furnishes the opportunity for the profitable pulverization of the soil, and to that extent, at least, it is beneficial to the succeeding grain crops, but whether, like the leguminous crops, it improves the condition of the soil by making its constituents directly available for the growth of other cereals can only be answered by further investigations.

From the data furnished in Table 2, the value of the manure produced by different rotations can readily be compared, and the influence of any changes in a rotation upon the manure supply can be easily estimated. For example, let us see what the effect of replacing clover with Timothy, in a common five-crop American rotation, would have upon the supply of manure. The manure-values of the crops, as shown by the table, would, for each acre, be as follows:

1—Corn	$16.82	Corn	$16.82
2—Wheat	2.11	Wheat	2.11
3—Oats	7.82	Oats	7.82
4—Timothy	8.91	Clover	19.89
5—Timothy	8.91	Clover	19.89
Total	$44.57	Total	$66.53
Average	$8.91	Average	$13.31

In these rotations we have assumed that the wheat only was sold, and that all other crops were consumed on the farm. Allowing the same yield of crops in the two rotations, we find that the clover brings up the manure value of the rotation to an average of $13.31, while the rotation with the Timothy gives an average of but $8.91 per acre, a difference of $4.40 for each acre in the rotation in favor of the clover, or $440.00 on a 100-acre farm. The difference would, however, be greater than this, as the rotation with clover should give a greater yield of crops than the rotation with Timothy, for two reasons; 1st, from the influence of the clover upon the soil in its growth; and 2d, the larger supply of manure should give greater productiveness.

In using our table for comparing different rotations with reference to the value of manure produced, the one giving the lowest value would therefore have the advantage.

It will be readily seen from what has already been presented, that a variety of crops grown in succession will tend to economize the elements of fertility in the soil, so that the greatest aggregate return for natural productiveness, or for manures applied would be obtained; while the continuous growth of a single crop would result in the waste of some of the valuable constituents of the soil

which are not in a form available for it, but which could be made use of by other crops.

The Horse Shoe and Its Application.

BY D. D. SLADE, M. D., PROFESSOR OF AGRICULTURAL ZOÖLOGY, HARVARD UNIVERSITY.

In remarks upon the preparation of the horse's foot for the shoe, I have constantly endeavored to impress upon students and readers, the importance of the following axiom—never suffer the normal structures of the foot to undergo any mutilation. At the same time, I have insisted upon the necessity of bringing the foot to a proper level. Any excess of growth at the toe renders the pasterns more oblique, and, as a consequence, throws undue weight upon the "back sinews," whereas, too great hight of heels has a similar effect upon the joints of the extremities, by rendering them too upright. Taking as our guide the foot of the animal that has never been brought to the forge, and which, in consequence, must be considered as a correct model, let the external wall of the hoof be reduced by means of the rasp *to a level with the firm unpared sole.* If there is no growth of the external wall beyond this level, then there is nothing to be removed.

In the selection of a shoe for the healthy foot, we must bear in mind the object in view, which is to protect the parts from excessive wear. This protection is to be found in a metallic rim of proper size and shape, securely adjusted. Almost every shoe in common use meets this end more or less satisfactorily, and I have already remarked that the proper preparation of the foot that has been previously shod is of vastly more importance than the particular kind of shoe to be adopted. At the same time, there are faults in the shoe most commonly employed, which had their origin in its particular adaptation to the foot after this had undergone more or less severe mutilation at the hands of the farrier, and which have been retained more through custom, than through actual necessity, as we have reason to hope. The most prominent of these faults consists in extreme narrowness of rim with a concavity upon the upper or foot surface, in order to prevent the sole from sustaining least weight or pressure, which it is perfectly unfitted to do after being pared down to a point of sensitiveness. In a state of nature we know that every portion of the foot comes to the ground and sustains its share of weight, and in the shod state, it should do the same as far as practicable. Hence, the shoe should be constructed with its upper surface perfectly flat, and with a breadth sufficient to protect a portion of the sole, and to sustain weight. It should be bevelled upon the ground surface, in imitation of the concavity of the sole, and not upon its upper surface, where the space thus formed serves as a lodging place for small stones and other foreign bodies. In shape it should follow the exact outline of the outer wall, being narrowed at the heels, but continued of the same thickness throughout. The lateral projection at the quarters, and the posterior one at the heels are unsightly, of no benefit, and should never be allowed where speed is required.

One of the highest authorities says on this point:—"In fitting the shoe to the back part of the foot, let the smith take care that it is not longer or wider than the point where the crust and bars unite. An eighth of an inch may be allowed to project backwards beyond this point, but not more, but there should not be the slightest overlapping sideways." In fine, the shoe should be accurately fitted to the foot as previously prepared, and not the foot to the shoe.

The weight of the shoe is a matter of more consequence than is generally conceded, and this is shown by accurate statistics. It should under all circumstances be as light as is consistent with durability. The use of calkins is very objectionable, but as yet no other contrivances have answered the same purpose as well. They should never be employed, however, except when absolutely required, and then they should be of equal length at toe and heels, otherwise an unequal strain is thrown upon tendons and ligaments, terminating sooner or later in serious injury to the extremities. Clips are useful as a means of fastening the shoe more securely, and of diminishing the number of nails.

Whether the shoe should be fitted to the foot in a hot or cold condition, has called forth at times a vast amount of controversy. Experience has taught that the momentary application of the hot shoe can be of no detriment to the horny fibers, and that the more accurate adjustment thereby attained far outweighs any possible injury to the parts.

The number and disposition of the nails depend upon the kind of shoe. For speed and light draft, from five to seven may be employed, while for heavy horses and for heavy draft the number may be increased. Where few nails are used they should be more widely distributed than is usually the custom. When it is remembered that the introduction of every nail is so much injury to the structures of the foot, it will readily be seen that the smaller the number requisite for the purpose the better for the animal. In driving the nails, it is essential that a thick short hold of the crust should be had, rather than a long thin one. Not only is the shoe thus held more firmly, but there is a probability that the nail holes may, by the downward growth of the horn, be removed at the next shoeing, which in most cases should not exceed an interval of four or five weeks. The points of the nails should be shortened to just that length which will permit them to be turned over and hammered down smoothly, with perhaps the least possible rasping. The common method of rasping notches for the extremities of the nails is not advisable. In fact, as I have already said, the rasp should never be used upon the external walls of the hoof except in cases of absolutely necessity to prevent striking of the opposite limb. Its use destroys the natural polish, exposes parts beneath which are not fitted for such exposure, and renders the horn brittle, and liable at any moment to quarter cracks and other maladies.

There are various forms of shoe adapted to abnormal conditions of the foot. Of these I will refer only to the Bar-shoe, as being extremely useful where dressings are to be retained upon the sole, as in the case of wounds or pricks, or where it is desirable to give strength to weak or injured heels, or to bring more direct pressure upon the frog.

The general management of the foot calls for a few words. The hoof should be washed daily in cold water by means of a sponge, and care taken to remove any foreign bodies which may have insinuated themselves beneath the shoe or into the clefts of sole or frog. No oil or blacking can supply the place of the beautiful natural polish of the unrasped crust, and no "stopping" of clay, corroding, or other mixture, can serve as a substitute for the unpared sole. Let no false notions of economy induce the employment of the smith whose only or chief recommendation is that his shoes remain secure upon the foot longer than those of his competitor. Let the shoes be removed, as a general rule every month, the foot brought by the rasp to the natural level, no paring of the sole or frog, no rasping of the crust, or opening up the heels allowed; a well fitting shoe adjusted as I have laid down, and the healthy foot will be preserved in a sound condition, and one already suffering from mismanagement, will have the best chances for recovery.

A Feed Coop for Chickens.

Mr. W. A. Hister, Clark Co., Ind., sends a brief description, with sketches, of a pen in which to feed small chickens. It consists of 8 horizontal cross-pieces or "nailers," and 50 palings or pickets. The end cross-pieces are

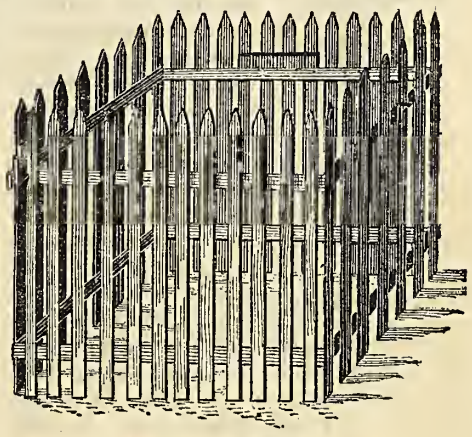


Fig. 1.—A CHICKEN PEN.

4 feet long, and those at the sides 7 feet, and are made of strips of boards 3 inches wide and 1 inch thick. The pickets are of thin oak, and were taken from an old fence. Two cleats are tacked on each of the cross-pieces, one on one side of the end, and the other on the opposite side, 2½ inches from the end. The cleats are 1 inch square, and extend 3 inches downward on the short cross-pieces, and the same distance upward on the long ones. The pickets are laid on the short cross-pieces so that the latter are 30 inches apart, and the lower 12 inches from the ground; the long cross-pieces are the same distance apart, but the lower is 9 inches from the ground. A door may be made in one side, and so arranged as to fasten with a button, and can be easily lifted off when desired.—The feed-coop, as completed, is shown in figure 1, and the method of arranging the cleats upon the ends of the cross-pieces may be seen in figure 2.

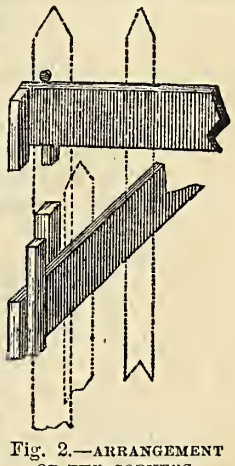


Fig. 2.—ARRANGEMENT OF THE CORNERS.

The Army Worm.

BY PROF. CYRUS THOMAS, CARBONDALE, ILL.

The appearance of the Army Worm in the region of Southern New York, in 1880, and in some portions of the Northwest in 1881, has again called special attention to it, and has induced entomologists to renew their study of its history and habits with a view of determining, if possible, some points that have hitherto remained in doubt. It is generally known to the readers of the *American Agriculturist*, that these "worms," one of which is shown in figure 1, after they have completed their term of life in this state, descend a few inches into the ground, and, having formed a kind of cell, are changed into shining chestnut-red, or mahogany-colored pupæ, or chrysalides of the form represented in figure 2. These chrysalides are ultimately transformed into dark fawn-colored or pale-brown moths, similar to figure 3.

The life history of the species, or the cycle of changes it undergoes, as observed in the latitude of Southern Illinois, may be briefly stated as follows: The moths make their appearance early in the spring, usually between the first and tenth of April, and soon after deposit their eggs. These, which are small, white, and almost spherical, are placed in the folds of the leaves of grass or grain, the female moth taking particular care to conceal them from sight by pushing them down into the still folded portion of the leaf. In about two weeks thereafter, these are hatched into dull or dirty-white, 16-footed caterpillars, which undergo repeated moultings, gradually acquiring their dark, striped color. In their normal condition, they are true cut-worms, living out this stage of their existence, concealed under the grass, cutting it off just at the surface of the ground. When they become excessively multiplied, they assume an abnormal role, becoming a marching or "Army Worm," moving in immense bodies from one field to another. As a general rule, they do not commenco marching until they are about two-thirds grown. So far as I have observed, those leaving one field always march in the same direction, but not always, as supposed by some, with unfailing certainty toward another field in which there is proper food. I have seen them leave a meadow in a direct line toward town, the nearest field in that direction being at least a mile off. While it may be, and probably is, true, that the cause of their marching is, as a general rule, to seek for food, there are certainly repeated exceptions, where they have been known to leave an ample supply. It is also true that they will march occasionally when not in excessive numbers. I observed an instanco of this kind in 1875, where a little straggling "army" left a fine grassy yard, and marched over ground partly denuded, where they were exposed to the hot rays of the sun which they so much dread, a large number of them perishing by the way. This movement was certainly the result of some other impelling cause than the want of food.

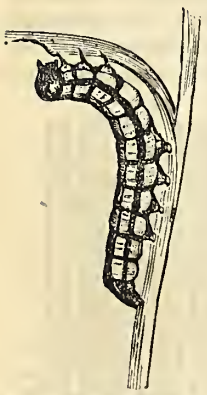


Fig. 1.—ARMY WORM.

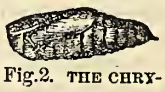


Fig.2. THE CHRYSALIS.

The habits of the "worms" are somewhat similar to those of ordinary cut-worms, as they avoid the hot sun, coming forth to feed chiefly in the night, or during cloudy weather. They hide under clods, stones, and other rubbish during the hot and sunny portion of the day. During their life in the larval state, which lasts about a month, the "worms" change their skin five times; and having completed their growth, descend into the ground a few inches below the surface, where they transform into pupæ. They spin no cocoon, but by movements of the body and excretions of a sticky fluid, usually form a kind of earthen cell; but occasionally they simply crawl into some hiding place to undergo their changes. About fifteen or twenty days after entering the ground they reappear as moths, coming out usually about dusk, and climbing up the grass stems where they rest awhile for their wings to dry. In about two weeks after this the females commence depositing their eggs. From personal observations, and all the data I have been able to obtain, it is found that the term of life of the individuals in their natural conditions, from the time the egg is deposited until the resulting moth deposits eggs, is, on an average, about 77 days: egg, 14; larva, 30; pupa, 17; moth, until the female deposits, 16 days.

Fig. 3.—THE MOTH, NATURAL SIZE.

The second brood of moths usually appears, in this region, in the latter part of June. Their history during the remainder of the year, in their natural conditions, is not so thoroughly known as that during the first half. By a wise provision of nature, it is so managed that an excessive multiplication of the species necessarily exposes them to view, and thereby brings upon them an excessive nnmber of parasitic insects. The consequence is that a numerous second brood of "worms" is an anomaly. I have observed but one fall "army" during thirty years' observations, and know of only two well attested cases of the kind in this immediate section in that time.

That the species is two-brooded here we know from direct observations; and that the pupæ of the second brood occasionally develop into moths, in the fall, is also an established fact, but all the data obtainable show that this is the exception and not the rule; and that on the contrary the mass, in fact, nearly all of the pupæ of this second brood remain in this state over the winter, coming out as moths about the first of April. Some experiments made, and others now being made, indicate that in confinement the moths of the second brood usually hatch out, whereas, in their natural condition, the rule is just the reverse, as above stated. Whilo the proof is conclusive that in this locality they hibernate in the pupa state, there are strong reasons for believing that a different rule prevails in the extreme northern part of this State, and also in New York. The determination of this point for the different localities is of some importance, as on it depends, to a certain degree, the value of some proposed remedies.

One important fact in reference to their development is, that they do not appear in excessive numbers except in a spring following a dry season. This is important, because it enables the farmers to predict when it *will not* appear, though they may not be able to tell beforehand when it *will*.

Experience since 1844 appears to *demonstrate conclusively* that another requisite, at least in this section, is, that the spring in which they appear shall be damp, or at least cloudy and rather cool. The year, on the whole, may be more than ordinarily dry and warm, but the spring must be damp and cool in the localities where they appear. But few if any exceptions can be found to this rule; in fact hot, dry weather will soon cause them to disappear. It is a fact worthy of notice, that in Illinois the Army Worm has appeared in the spring following each Chinch-bug year.

Remedies and Precautionary Measures.

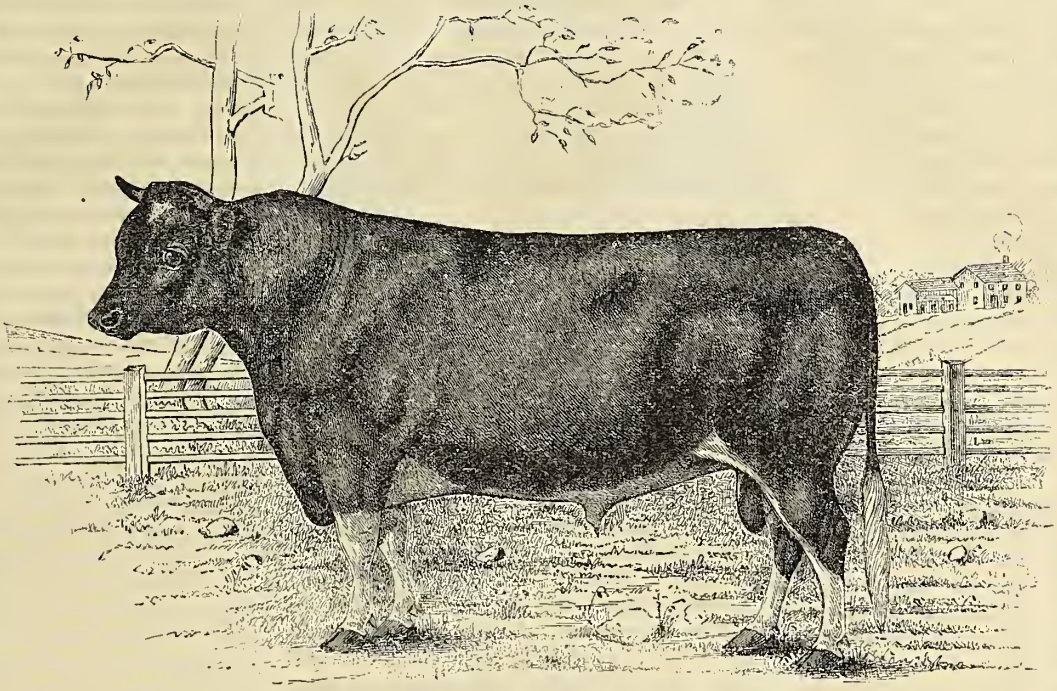
That it is possible to protect a field from a marching army of worms by ditching, is a well-kown fact. Planks placed on edge and fitted end to end, smeared on the upper edge with coal tar or kerosene, is another method which has been adopted in some cases with success; placing lines of coal tar across their pathway has been tried, but they soon cover this and pass over it. Sprinkling the grass in front of them with water mixed with Paris Green and London Purple has, it is said, proved successful in checking their march; but the use of such poisonous substances in such places cannot be justified and should never be adopted. Where the worms have obtained possession of a field, and spread themselves over it, there is no practical way of destroying them, and at the same time saving the crop. Topical applications, such as solutions, powders, etc., are utterly useless and a waste of timo and money, except so far, only, as they act as fertilizers. Running heavy rollers of stone or iron over the field has been suggested, but the objections to this plan are, that comparatively few farmers are supplied with such rollers, and that only a portion of the "worms" are destroyed by this means. Where it is very desirable to preserve the meadow so far as possible, this plan is worthy of adption by all who may be prepared for it. Burning over the meadows in the winter or early spring has proved, in some instances, an effectual remedy in this latitude, probably because it destroys the old grass in which they prefer to deposit their eggs. The chief objection to this remedy is that it requires the burning to be done every year, unless some means of knowing beforehand when the insects will come can be ascertained. As we already know that they only come after a dry fall or summer, this will limit the use of this precautionary measuro to the winter following such seasons.

My own opinion is, that if the "worms" are very numerous in a meadow, the best thing that can be done is, to turn them under with the plow as deeply as possible, and plant the ground in some crop that can be matured in the season, and that is applicable. If the meadow is new, and it is very desirable to preserve it for the next year, the farmer must then turn in hogs, etc., uso the roller, or adopt such device as may be most convenient so as to make the injury as light as possible, but with no idea of saving the present crop.

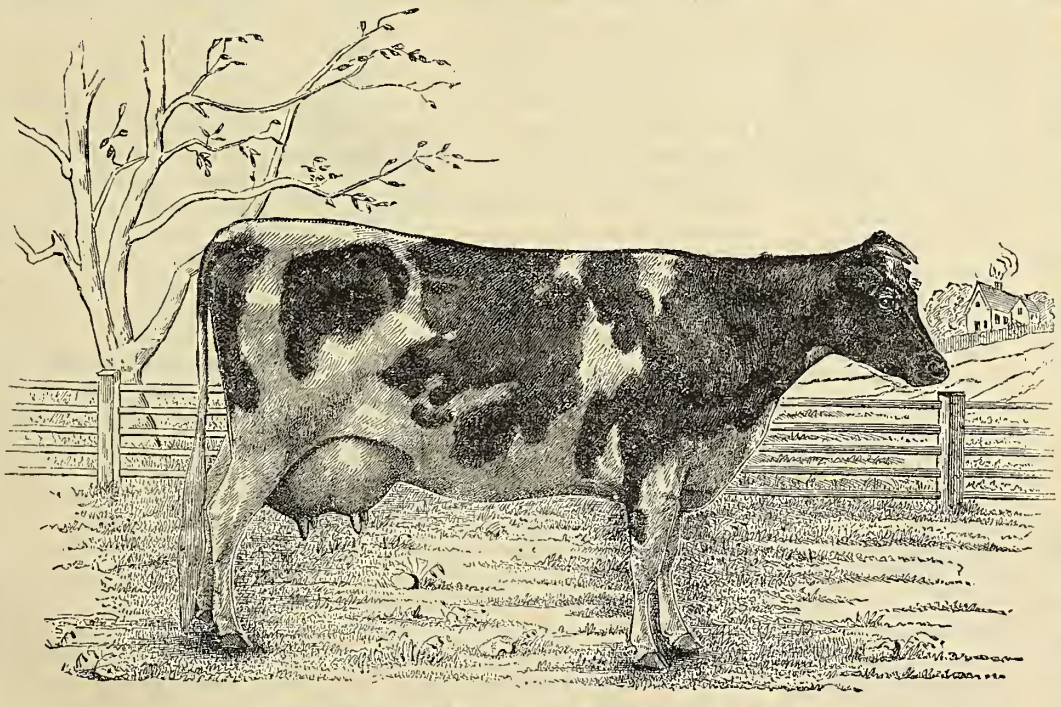
The Cattle of Holland.

The Dutch farmers have long been famous as butter and cheese-makers, and the dairy cattle of Holland—especially of North Holland and Friesland—have been regarded on the continent of Europe as the best dairy cattle of the world. They have been carefully bred according to practical rules—not according to our English or Anglo-American ideas altogether—but so that we have a remarkable result before us, in the best breed of Dutch cattle of the present day. The cows are black and white, of the largest size, "big as Shorthorns," and admirably well formed as milk producers. The Dutch cow usually has a capacious paunch, a large udder and teats, great branching, tortuous milk-veins, an "escutcheon" of the most favorable promise, and a general preponderance of the digestive and lactiferous parts over the other portions of the body. Their milk is moderately rich, yielding excellent butter, but while this has not so positive and delicious a flavor, nor such good color as that of the Channel Island cows, yet it is firm, and has the reputation of keeping better than the butter of any other of the pure breeds. For cheese making, however, the milk has no superior. This is supposed to be owing to the fact that the butter globules are, though not large, of a very uniform size, and are easily mixed thoroughly with the milk before and at the time of coagulation, or curd-forming. This gives the cheese a uniformity of richness in all its parts, which is inherent in the intimate texture of the curd, and which does not depend upon subsequent mixture. Like other large breeds, these cows require abundant feed, gently rolling or level land, and do best on rich alluvial meadows like those of their native "Hollowland," as Waring calls it. In this respect they are like the Shorthorns, with which noted race one has a natural inclination to compare them.

When first introduced into this country by Winthrop W. Chenery, Esq., of Boston, thirty odd years ago, the Dutch cattle were seen more or less at the fairs, and compared unfavorably, to our unschooled eyes, with the trim beef-bearing Shorthorns. They were called "big-framed," "bony," "coarse brutes," "elephantine," and all that—admitted, however, to be great milk-producers. Since that time these cattle have not changed, but our ideas have. We see their extraordinary adaptation to the dairy, and even Shorthorn breeders acknowledge that their favorite breed, always vaunted as great milkers, as a race cannot compare with them in this respect, while as beef animals the cattle of Holland fatten quickly and make excellent beef, which is really all that a dairyman needs to know. They are not, and never will be, raised exclusively for beef as the Shorthorns are, and their whole build and "make up" contrasts, as it should, strongly with any beef-making race. Viewed from a beef-breeder's standpoint, the cows are not symmetrical, but the dairyman *demands* this lack of symmetry, and it fills his eye just in proportion as it promises to fill his pails. He looks for excessive development of the "business end" in his cow, just as much as the beef-breeder looks for thickness of meat over the ribs and loin, and for full crops and close twists. A milk cow must have udder and teats, and milk-veins, and escutcheon. See the accompanying engraving. She must have also a good head, mouth, and teeth, and a capacious paunch. Whatever else she has are of secondary interest, and may be said to be of little account, provided they are of useful proportions and adapted to her needs. A soft, unctuous hide is indication of health, a good coat is a protection against vicissitudes of weather; her feet and legs must be capable of sustaining her weight without fatigue, and of good form, not too large and bony. Everything which is of secondary importance may be reduced in the development of the milch cow to its smallest useful size. When this occurs we have the true *wedge shape* of the perfect milch cow—remarkably seen in the Dutch cow, and really characteristic of the Holstein breed, as it is also of the Ayrshires, and of other great milking races. It was a surprise to Mr. Chenery to find that cattle breeders in this country knew absolutely nothing about these fine cattle, and so to hide their origin he gave them a "trade name" which it seems absolutely discreditable to American intelligence to continue to use. Dutch they are, Friesian they may be. What they are called at home, except "good cows," we do not know, but we do know that they did not come from



THE FIRST PRIZE HOLSTEIN BULL "UNCLE TOM."



THE FIRST PRIZE HOLSTEIN COW "NETHERLAND QUEEN."

Holstein, nor Schleswig, nor from any other part of Denmark or Germany. They have been largely imported of late years—are becoming every year more widely known and valued.

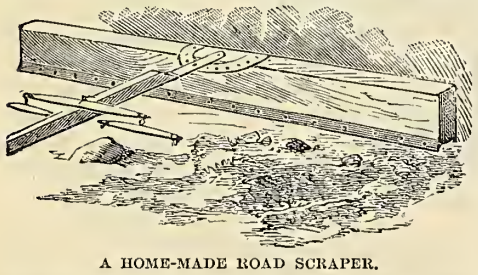
We present with this article typical forms of both sexes of these cattle, from one of the best herds in the country—that of Messrs. Smiths & Powell, of Syracuse, N. Y. The fact that the bull, "Uncle Tom," has won the first prize at the New York State Show four consecutive years, is evidence of his excellence which can hardly be gainsaid, for at no show in this country could he meet so large or so worthy competition. He was bred in this country besides, which we hold is greatly to his credit, as well as to that of both his breeder and owners, but it is a still greater merit to stand, as he did this year, in the midst of his prize-winning offspring.

The cow, "Netherland Queen," was imported as a yearling, selected in Holland by her present owners. Her dam, as a four-year-old, gave 74 lbs. of milk a day on grass alone. As a yearling, "Netherland Queen" won 1st at Elmira, at the State Show, in 1879; the next year first at Utica; then in the Mature Class, 2d at Albany, and this year, at Elmira, she took again the queenly position, winning 1st in a strong ring. Her milk record is certainly worthy that of her achievements in the prize ring, namely: As a two-year-old she gave 58 lbs. 12 oz. in a day; 1,670 lbs. 9 oz. in a month; and 13,574 lbs. 3 oz. in a year—a record said to be unequalled. As a four-year-old she has given 76 lbs. in a day, and 2,132 lbs. 6 oz. in a month; and from May 19th to September 19th this year she gave 7,271 lbs. 6 oz., and this record will doubtless be increased yearly until she is seven years old.

A Texan Road Scraper.

BY C. C. GEORGESON, PROFESSOR OF AGRICULTURE, COLLEGE STATION, TEXAS.

I have found the home-made road scraper here represented very efficient. If it has not been illustrated in your excellent paper, it may perhaps prove of value to some of your readers. It consists simply of a piece of 4 by 8-inch scantling, 10 feet long, or longer if desired. On the lower side of the face is firmly bolted a bar of iron, two inches wide by 1/4-inch thick. It is sunk into the scantling, and should project 1/4 inch below the wood. The tongue is fastened in the middle of the scraper, on the upper side, by a bolt, about which it can revolve so as to be placed at any desired angle, where it is held by a stout semi-circular iron bar, with a radius of about a foot, bolted to the scraper, as indicated in the engraving. In this, half a dozen or more holes are made. A bolt is passed



A HOME-MADE ROAD SCRAPER.

through a corresponding hole in the tongue into the holes in the bar, and thus holds the tongue firmly in position. The driver stands on the scraper when used, and by balancing his weight from place to place, as needed by the inequalities of the ground, the implement will do good work. On very hard and gravelly roads the bar on the face should be of steel instead of iron. The scraper complete can be made here, in Texas, for about $2.50.

A Double Spring Latch Gate.

Mr. F. B. Lindsay, Nicholas Co., Ky., sends sketches and description of a gate latch, and writes as follows: "A latch lever, *a*, fig. 1, is fastened to the gate by a bolt at *g*. By pressing back this lever the latch, *b*, is withdrawn from the post at *e*. A spring of hickory or locust is so adjusted that when the hand

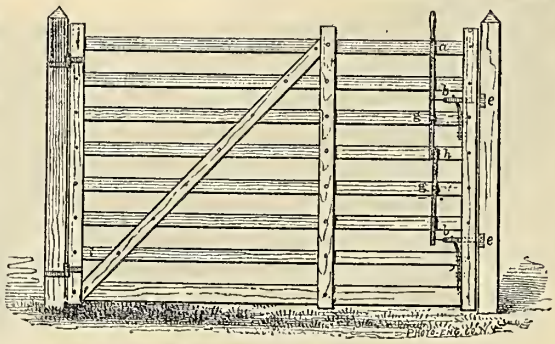


Fig. 1.—A GATE WITH A DOUBLE SPRING LATCH.

is removed from the lever it will return to its former position. At the same time that the lever *a* is drawn back, its lower end moves forward, and in doing this the latter presses against the upper end, *h*, of a similar lever *g*, which causes the lower latch to be withdrawn from the socket in the post. The inner face of the post is shown in figure 2. The latches are pieces of iron 6 or 8 inches in length, having a small hole in one end through which a wire passes to fasten it to the lever. The sockets in the post (fig. 2), are iron plates with holes the size of the end of the catches, screwed to the post; the outer edges protruding slightly, are bent back like the catch of a door lock. This gate is difficult for any farm stock to open; in fact, it cannot be opened unless the upper end of the lever *a* is struck in the right direction.

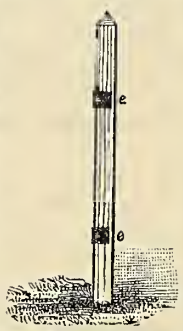


Fig. 2.—POST WITH SOCKETS.

The Butter Globule.

BY HON. X. A. WILLARD, LITTLE FALLS, N. Y.

The interesting article on "Artificial Milk," by Prof. Storer, in the *American Agriculturist* for November, touches a long disputed, and as yet unsettled question, in regard to the Butter Globule. The composition of fresh milk of average quality from common cows may be given as follows: Water, 87.40; Butter, 3.43; Caseine, 3.12; Milk-Sugar, 5.12; Mineral Matter (ash), .93—in 100 parts. On microscopic examination it appears as a clear fluid in which fat globules, the so-called milk globules, are suspended as in an emulsion. These fat globules are of different sizes in the milk of different animals, and even of animals of the same kind; they vary in diameter from 1/2000 to 1/4000 part of an inch. The question concerning which there has been a difference of opinion among chemists, is, whether these small globules of fat are enclosed in cells, with an investing membrane of either Caseine or some albuminous substance, the composition of which has not yet been defined. Or, on the other hand, whether this fatty matter is in a free condition, as in a simple emulsion? The former, which may be designated here as the "membrane theory," has been generally accepted by writers on the dairy, and upon this theory the philosophy of churning has been built up—that is to say, the albuminous covering of the globule must be broken for the fat to escape before butter can be formed. Lehman held that the nitrogenous substance, which we call Caseine, occurs in milk for the most part in a state of solution, but a not inconsiderable portion forms the free investing membrane or wall of the milk globules. Simon believed he had detected fragments of these membranes in milk which had been evaporated and treated with ether. Henle was the first to demonstrate its existence. On examining, under the microscope, the gradual action of Acetic Acid on the milk globules, he noticed a decided distortion of this membrane. Mitscherlich, on shaking perfectly fresh milk with Ether, found it scarcely at all changed, the Ether merely taking up a little fat. It was argued, therefore, if the milk were a simple emulsion, it would yield all its fat to the Ether, and would be converted into a transparent, tolerably clear fluid. As this is not the case, the separate fat vesicles must be surrounded by an insoluble substance. If now we add a substance capable of dissolving these membranes, Ether, when shaken with milk, will act on it precisely as on an emulsion—that is to say, it will take up the fatty matters; and, indeed, this is the case if a little Caustic or Carbonated Alkali be added to the milk before it is shaken with Ether. Lehman observed the following facts: On placing under the microscope milk shaken with Ether, but to which no Potash had been added, the surface of the milk globules appeared of diminished transparency, opaque, and fissured—the wall presenting the appearance of being coagulated. When Phosphate of Soda and Sulphate of Soda were used in place of Potash, milk treated with the former yielded almost all its fat to Ether; but did not become so clear as when treated with Potash. Under the microscope the aqueous fluid exhibited only a few fat globules, which were no longer round, but corrugated of a caudate form. Sulphate of Soda has the property of causing the capsules of the milk globules to burst, after which the fat can be extracted from the milk by Ether. The watery fluid, however, remains very turbid, but no longer exhibits under the microscope either milk globules or shreds of destroyed capsules, but only extremely minute, scarcely insoluble granules, which are unquestionably, he thinks, fragments of the destroyed capsules, and do not consist of finely comminuted fat; for on addition of a little Potash they do not disappear under the microscope, but the fluid which had previously retained its milky color becomes perfectly clear and limpid. The above is Lehman's chief argument in favor of the membrane theory.

Again, an American dairy writer pretends to have seen, under the microscope, these fat globules with the membrane torn, and the jagged, broken, part hanging down like a flap on one side of the globule; he also claims to have seen globules with investing mem-

branes filled with *water* instead of fat. It may be remarked, however, in this connection, that persons who have had but slight experience in the use of the microscope are often misled in what they see. Such observations, therefore, may need confirmation from the trained scientist before being accepted.

Now, on the other hand, without referring to the arguments of those who have from time to time taken exception to the "membrane theory," it will suffice to quote briefly from Prof. Storer's article. He says, "Dubrunfaut found, in fact, that almost any kind of fat taken in the fluid state, could be emulsified in water that had been made slightly alkaline with Carbonate of Soda, so as to imitate the serum of fresh milk. When viewed under the microscope, the globules of fat suspended in this way had the same general appearance as the fat globules in normal milk, and they were of variable size like the latter. On using a somewhat stronger alkaline liquid, the result was still more striking, and the emulsified fat behaved very much like milk. On allowing the liquid to stand at rest, a creamy layer rose on its surface."

This principle, as opposed to the "membrane theory," has been somewhat exemplified in the recent introduction of machinery for manipulating lard, so it can be used as a substitute for butter in skim-milk cheese. The melted lard and warm skimmed milk are passed together through a machine having a cylinder set with iron pegs, and revolving with great rapidity. By this means the lard is divided up into minute particles, which appear to be held firmly in suspension by the adhesion of the milk, similar to the original butter globules. The mixture is discharged in the form of thin cream, and is then mingled through the mass of skimmed milk in the vats, and then made into cheese. Before the invention of this machine, it was found difficult to distribute the fat evenly and minutely throughout the skim-milk, the larger granules of fat being liable to be discovered in the matured cheese.

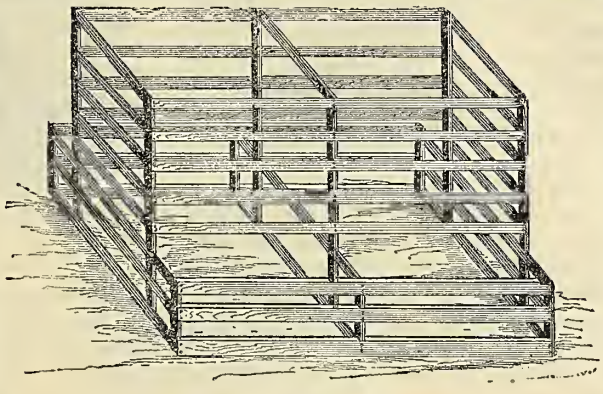
Again, in the churning of oleomargarine with milk, or buttermilk, to give a more pronounced butter flavor, the particles of fat coalesce. There is no abrasion or breaking of "cell-skins," and yet an artificial butter is evolved, often so nearly resembling genuine butter as to be scarcely distinguishable from it by good judges.

Is there not reasonable ground, then, for suspecting that the older chemists may have been mistaken in regard to the "membrane theory" of the butter globule, and is not the simple emulsion of fat in the milk more in accordance with the simplicity of nature's laws than a complicated covering of the fat globule with a substance, the composition of which the chemists have been unable to define? May not the simple adhesion of the liquid to the fat globules have been mistaken for the investing membrane? This is the question which yet remains to be settled.

Pecan Sprouts.—"J. L. W.," Robertson Co., Texas, is greatly annoyed by the springing up of Pecan sprouts in an old valley field. Though he cuts them every year, they increase rather than diminish, sometimes growing as large as one's wrist in one year. Can any one suggest anything better than to cut the sprouts while still green and growing? Please let us hear from some of our Texan friends who have had experience.

A Large Feed Rack.

Mr. P. W. Fuller, Brown Co., Kansas, has a large rack which he finds convenient for feeding hay or straw to stock. The width of the rack is 7 feet, but it can be any length desired (Mr. F.'s is 14 feet); hight, 10 feet; hight of manger, 2½ feet; width, 1½ foot. Cattle can eat from both sides. The advantage of such a rack, shown in the accompanying engraving, is that it will hold a large quantity of feed, and so securely that very little can be wasted by the feeding animals.



A LARGE, YARD FODDER RACK.

An Improved Field.

BY J. M. HUBBARD, MIDDLETOWN, CONN.

The field is shown with sufficiant accuracy in the accompanying diagram. It contains between five and six acres, is bounded on the north and east by highways, on the south by land of a neighbor, and on the west by land within the same enclosure, but differently conditioned and requiring different treatment. The surface descends slightly from south to north, and more considerably—perhaps one foot in twenty—from east to west. This field is, in fact, a section of the bench or second bottom lying between the low level land on the west and a range of hills which rise immediately across the highway on the east. It is favorably situated for cultivation, and the quality of the soil is naturally good.

The irregular line within the drained field encloses a tract where the water which oozes from under the hill on the east finds its way to the surface. This tract was not so wet that it could not be mowed with a machine in an ordinary season, and sometimes its borders might be encroached upon by the operations of tillage. The dotted straight lines show, in connection with the outlines of the field, those portions of it which were from time to time cultivated previous to the improvement. Each one of them, as will be seen, included some portion of the wet land. The other alternative was to make them considerably smaller, and this was chosen as the least of two evils. Nevertheless it was an evil, and sometimes a serious one. The operations of seeding and culture were not unfrequently delayed and thrown out of season thereby to the injury of the crop and the enhancement of its cost. But I need not enlarge upon the disadvantages of such fields. Most farmers know the story only too well. The straight continuous lines within the field show approximately the location of the tile drains laid a year ago last spring to carry off the surplus water from this tract. The arrangement of mains and branches is a very simple one, but the location of each and all was not determined without considerable study. After establishing the outlet the main drain was placed as far up the slope as possible, and still cut the water bearing strata at the lowest point of its undulations, so that no water should pass underneath and find its way to the surface of the field lower down. Then by means of branches, located wherever necessary, it was sought to gather all the water which would naturally come to the surface higher up.

These branches were placed just where they were thought to be needed, with no care to make them parallel or equidistant. Both the main drain and branches have done their work well. A crop of corn and one of tobacco have since been taken from this portion of the field, and in only one point, and that easily remedied, has the drainage proved insufficient.

I am led by observation to think that the condition of this field before draining illustrates fairly that of many fields now in need of like improvement The trouble with such fields is not merely that the wet spot is itself unfitted for cultivation, but that its presence obstructs the operations of culture upon all other portions of the field, and it thus depreciates the value of every acre the field contains. In years gone by when the hand hoe was, after the plow and harrow, the principal implement of tillage, such an obstruction was of less consequence. But now that horse-power and the implements adapted thereto have almost wholly superseded handwork in field culture, we can no longer tolerate, as we once did, obstructed, irregular, or diminutive, fields. So it comes about that the question of draining that wet spot presses with a new urgency. The man who feels this pressure is the one whom I hope to help in some degree by the suggestions of this article. Underdraining may be new to him, and may seem to be difficult and almost mysterious; but if he has fairly good powers of observation and reflection, and will apply them to the case in hand, its difficulties will vanish before him. The

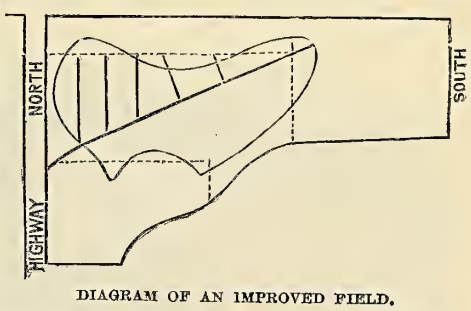


DIAGRAM OF AN IMPROVED FIELD.

initial point of such a work is the outlet, and generally the lowest point from which the water can escape freely is the best. The next question is one of grade, and unless the surface is very nearly level, the action of surface water will indicate this with sufficient accuracy. Water will not run up hill, but it will run down, though the descent be but slight. For a guide in grading the bottom of the ditch there is nothing better than running water, and if necessary I would do the work in the wettest season of the year in order to make use of it. When it runs with steady uniform current in the bottom of the ditch, the tile may be put down fearlessly. In all

but the very simplest cases, a main drain to carry off the water and branches to collect it, will be found necessary. The main may be made to gather where it can, but its other function as a carrier must control its location. For the location of the branches, I know of no better rule than to aim them straight as practicable at the source of the water they are to collect. All this will not come clear at first thought. One must study his problem until he understands it. Sometimes a little experimental digging will prove helpful. A few holes dug three or four feet deep at different points may reveal much of the underground movement of water to which the system of drains should be adapted. Such a piece of work well done is a source of great satisfaction as well as a matter of pecuniary profit. A sense of release, a feeling of victory comes rightfully to one who has conquered such an obstacle and freed himself from such a fretting hindrance. And I believe that in a pecuniary point of view the results of such work are more favorable than ordinary estimates would show. Or, to look at the matter from the other side, I believe that the existence of a miry, saturated tract even of small extent in a cultivated field, is a far greater evil than is generally supposed. Wherever a farmer has one, my advice would be to first find out just what needs doing, and then, like Grant at Donelson, move immediately upon its works.

Portable or Temporary Iron Wire Fences.

Portable fences, for the purpose of making temporary inclosures for animals, are much more employed than formerly, and we have given in former volumes various plans for constructing them of wood. In France such fences are made of iron wire, or bands of iron, and a recent *Journal d'Agriculture Pratique*, gives engravings of two forms that have been exhibited at the fairs this year. Fig. 1 shows an inclosure made with iron wire; the posts are also of iron, said to be constructed with special reference to lightness, though no details are given. Each post has a plate cast upon its lower end; this is placed about 18 inches below the surface, and covered with successive layers of dry soil,

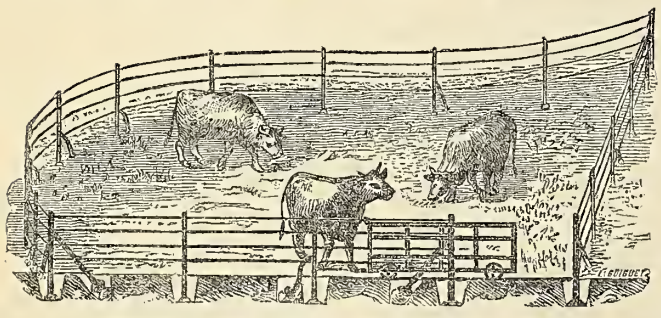


Fig. 1.—AN ENCLOSURE MADE WITH IRON WIRE.

each of which is pounded down solidly. The front edge of the engraving shows the holes in section with the plates at the lower ends of the posts. This method of setting the posts is said to give them great firmness, and the wire, plain or barbed, as may be preferred, is stretched in the usual manner. Instead of a simple wire, a wire cord, made by twisting together several small wires, is used throughout, or for the top of the fence only on account of its greater strength and flexibility. Such a fence may have its position changed in a short time, and when used by tenants is readily moved to another farm. The inclosure shown in figure 2 has its supports furnished at the base with an inverted cone, and are driven into the ground; according to the description the supports are placed between four or five feet apart, with strips of sheet iron between them, the width of which is not stated. These strips are used instead of wire, as they present a more visible obstacle to the animals. This end can, however, be accomplished with a wire fence, by the use of a single strip of light wood in place of one strand of wire. We give these examples of what has been done in France, rather as suggestions than as patterns to be followed, as we have no doubt some of our ingenious farmers will be able to greatly simplify the construction of portable fences in whole or in part of wire.

Artificial Incubation.

BY MASON C. WELD.

My experience with Artificial Incubation is not so great that I write with the authority of "One who knows"—and yet I do know a thing or two, which I have no doubt may prove of use to some of the readers of the *American Agriculturist*.

Care of Early Chickens.

We want early chickens—even chickens hatched in January are welcome if we can take care of them. I was shown, a few days ago, an inquiry by a reader of the *American Agriculturist*, in which the writer asked if chickens could be raised upon a board floor. I presume the writer had attempted to take care of very early chicks, and had let them run in a room with a board floor. He probably found that they became diseased in their feet—the toes curling under—or were crippled in some other way. Chicks seem to need either to run upon the bare ground, or to have sand and gravel an inch or two deep to run over and scratch in. This may be provided upon a board floor, and it is all the better if it be rather moist for a few feet around the water "fountain." I may seem to some to be taking care of my chicks before they are hatched, but I can assure young poultry raisers that the ability to take good care of the chicks is much more important than to get them well hatched out. The nursery may be subject to great fluctuations of temperature. If the chicks have one or more artificial mothers, or brooding boxes to keep warm in, or if there be a fair proportion of chickens six weeks old or older, the hatchlings will not suffer even if the thermometer drops to freezing or below by night, while by day it may rise to 100° in the sun and no harm will be done. I think such variations of temperature rather beneficial.

Of Incubators.

The best need watching, and I would say, let no one attempt artificial incubation who will not take the responsibility of seeing to his lamps and thermometers as often as once in three hours day and night if necessary. Not that no incubators may be left for six, eight, or even ten hours; but when a sudden fall in the outside temperature takes place, when the wind changes, and all that, there is danger of the heat getting less, and under other circumstances, still more danger of the heat getting too high.

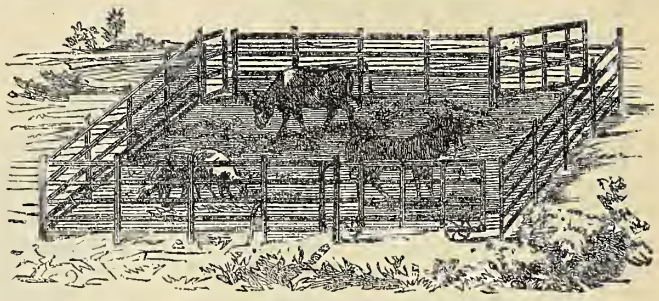


Fig. 2.—AN ENCLOSURE OF SHEET IRON STRIPS.

It is curious that eggs, during most of the period of incubation, may now and then become for a short time, stone-cold without detriment, while a very little over-heating will prove fatal. I know a lot of eggs, perhaps 100 or 150 in number, which, when within two or three days of hatching, were sent on from New York to Providence there to be exhibited with the incubator in which they had been brought thus far toward hatching. They were laid in a basket packed about with cotton wool, and so transported without heat. On arrival they were quite cold, but soon warmed up and nearly all hatched. At this period eggs bear a great deal of moving about, and greater changes of temperature than at any other during the three weeks of incubation.

The most easily regulated source of heat, the most economical, and the one subject to least fluctuations, is a kerosene lamp. The use of gas, where this is possible, is not advisable, on account of the constant fluctuations of the flame arising from variations in the pressure. It matters not how perfectly the heat is regulated, it is much better to have few or no fluctuations to regulate. The use of fermenting manure as a source of heat is absurd and abominable, very difficult to regulate, expensive, and unpleasant.

A gardener in charge of greenhouses or hot-beds always has them on his mind, asleep or awake, and yet his mind is not burdened. At any notable change of temperature occurring he lifts the sashes, opens the ventilators or closes the same; he builds more fire, or covers the sashes with mats, thus keeping the heat in and the cold out, or the reverse, according to the necessity. In the same way any one using an incubator must keep it on his mind, and by turning his lamp up or down maintain a temperature as near 102° as possible. On the occurrence of sudden changes he must not trust the self-regulating appliances, but watch the thermometers, and keep the heat a degree below the normal temperature for fear of a sudden rise. Incubators should be started early, so that experience in managing them may be gained before the spring approaches. The instructions which accompany them are of course important.

The Beauties of the Law were illustrated by a recent case in England. Three persons were arrested for stealing 56 lbs. of grapes from a hot-house. The prosecutor found that it was not unlawful to steal growing fruit, but the rascals were short-sighted enough to carry off the scissors with which they cut the grapes, and they were tried on

the charge of stealing scissors, and one was sentenced to three months, and his two associates to one month's imprisonment each.

The Canada Thistle.

Probably no weed is held in greater dread, and justly too, by farmers, than the "Canada Thistle." In localities where it is, fortunately, not known, its reputation has gone before, and farmers, when a new weed makes its appearance in their grounds, at once ask if it is not the dreaded "Canada Thistle." The number of plants that have been suspected of being this Thistle, and have been sent with a view to ascertain the facts, is very large. The plant is known by the name "Canada Thistle" in this country only; it was probably introduced from Europe by the way of Canada, and was so called for this reason. In England it is known as "Creeping Thistle," and "Corn Thistle," and in France and Germany by the names in the language of those countries which translate into "Field Thistle." There are several native kinds of Thistle, and besides the "Canada," one other introduced species is common upon our farms. The general appearance of a Thistle head should be well known, it being often figured as the emblem of Scotland. Numerous tubular purplish flowers are collected in a close head, which is surrounded by a globular, or egg-shaped, usually prickly *involucre*, as the greenish cup-shaped portion at the base of the head is called. A plant suspected of being the "Canada Thistle" should have a flower head of this kind. To distinguish the "Canada" from all other thistles, the size is sufficient. The heads are rarely an inch in diameter, usually not over half an inch. The plant throws up slender stems, usually two feet high, though in rich grounds it may be taller. The plant sometimes bears only sterile, and sometimes only fertile flowers; the heads of the former are globular in shape, the others being egg-shaped. The flowers are of a dingy purplish color. The foliage is of a pale-green color, each leaf narrow, deeply lobed on the margin, and with numerous very sharp prickles. An engraving is given of a single lower or root-leaf, and a flowering stem in its young state; later, when the unopened heads come into flower, their stems will elongate, and raise these flowers to nearly the level of the upper one. The leaves upon the upper part of the stem are smaller and exceedingly spiny. The "Canada Thistle" has the reputation of being the most formidable weed of agriculture (though a native, the so-called "Horse Nettle," *Solanum Carolinense*, is far more to be dreaded), and we are often asked how to destroy it. When it once is well established, and its long creeping root stocks which branch in every direction, get possession of the soil, they are very difficult to eradicate. The plant is introduced by the seed. The first year it makes but little show, only a tuft of leaves, with no ascending stem. In this state it is busy in preparing for the future, by getting possession of the soil, its running root stocks are formed, and a store of food laid up in them for the growth of future plants. Fortunate is the farmer who recognizes the pest on its first appearance, as he can then easily uproot the plant, and save much future trouble. Where a few plants have made a foothold, they have sometimes been destroyed by cutting off their flowering stem and applying a small handful of salt to the freshly cut root. Unfortunately the plant is not usually noticed until it is well established and forces itself upon the attention of the farmer. Where there is a large patch no uprooting or salting will answer. The plant "means business," and unless the farmer accepts the challenge, he had better sell out, or the Thistle will eventually get the better of him. There is no one fact more thoroughly proved than that a plant can not live long without leaves. If the green foliage be cut off as often as it appears above the surface, the plant *must die*. If cutting with a sharp hoe, every few days, if need be, be persisted in, the plant, will in time be exhausted. If it be cut two or three times in the season, the plant will like it rather than otherwise, and probably spread all the faster for it. It is a case in which there can be no half measures; it must be "war to the knife and the knife to the hilt," else the farmer will come out of the fight second best. We know of cases in which persistent work has conquered this formidable weed: it will do so every time.

LEAF, ROOT, AND FLOWER-STALK OF THE "CANADA THISTLE."

Farming as an Occupation.—II.

BY HON. GEORGE GEDDES.

What is success in life? If we mean the accumulation of great wealth—then few men in any business will be successful. If we mean the acquisition of a competence, then most good farmers succeed. Just how they succeed I cannot show by giving particulars, beyond mentioning certain great principles which are necessary to success in nearly every kind of business; among these may be specified, industry and economy, directed by intelligence. Let us test this matter on a large scale. At the end of the Revolutionary war, say one hundred years ago—there was scarcely a white man living, in all that part of the State of New York lying west of Utica. Dense forests covered all the land, and before food could be produced, at least twelve day's labor of a sturdy axe-man was required to clear an acre fit for planting corn or wheat, among stumps that must remain in the way of the plow for many years. This land once cleared, except the stumps, must be fenced with immense labor. Houses and barns must be constructed. Mills, bridges, roads, then school houses, then churches, came in their order. No rich men went there, except as speculators, hindering the progress of the country by buying land in advance of the demand of settlers, and raising the price as the settlements advanced. The rich lands teemed with malaria, and this was especially true along the streams which gave sites for mills, which were to form nuclei of villages. Notwithstanding all these, and many other obstacles, the farmers on this part of our State, have accumulated a mass of wealth, which now appears in cities, villages, farms, and all the elegances of the most advanced civilization. But why cite the cities and villages as the work of the farmers? Because they all owe their existence to the fields around them—and their inhabitants are but the manufacturers and exchangers of the productions of the soil. Besides this accumulation of wealth that can be seen, the settlers of this land have supported themselves, educated their children, encouraged all branches of business, and made them prosperous. This shows that farming does pay, when viewed in its aggregate results. It not only pays, but it makes everything else pay. Looking at this work of a century, we ask, what will the descendents of these farmers do with the accumulations of following centuries. They pay no rent to landlords; the profits are all their own.

This is but the money view of the subject. The pure air and health that have resulted from drained swamps and cultivated lands; the room to enjoy life, and the ability to stay all the year at home, as compared with city life, which forces an absence of a month or two every summer in pursuit of health; these and many other considerations which make a country life desirable, are not to be lost sight of, when we are enquiring whether

farming pays. There are men, and many women, who cannot endure the imagined monotony—and retirement of country life. They must go faster, they must have more money, and spend more than farming will give them. Let such people have their way, and do not urge them to live away from the pavements. There will be farmers enough without them, to meet all demands for food and material for clothing all the non-producers. There is now, ever was, and ever will be, the sharpest competition in farming, of any business whatever, and the great question with farmers, always is, will paying prices be received for their products?

The wonderful improvement in the tools and machinery used on farms, and the vast extension of railroads to new fields, make the question of markets in which to sell the farm products much more pressing, than the one so often put in the past, how shall we keep farmer's sons on the farms, and prevent their going into the cities to swell the ranks of competition there? Let them go; the cities need their new blood, and their brothers whom they leave behind, will rejoice in their success in building up markets.

Young men, city raised, often enquire as to where they had better locate, with a view of spending their lives on farms. My first answer is, go to some good land. Do not accept poor land as a gift, unless it is near some town which will pay for perishable articles that will not bear long transportation, but as railroads are now managed, it is hard to say what will not bear, what were but lately called long distances. Farming near city markets demands peculiar gifts, among them ability to peddle "truck." Let us return to the consideration of what has been done in Central and Western New York. The pioneers of these two regions were mainly of the same stock; and the differences that can now be found between the people living in the northern towns of Oneida County and the lands thereabouts, and the people in Livingston County, are due to the soils and climates there found.

On fruitful soils in good climates, the best people not only remain, but leave their children. On lands in some of the northern parts of this State, the forests were the attractions to the pioneers, and the timber once removed, the land is too poor to enable any considerable population to find support. So it will become a great park, in which to raise deer and trout. Guides and health or pleasure seekers will be its principal population.

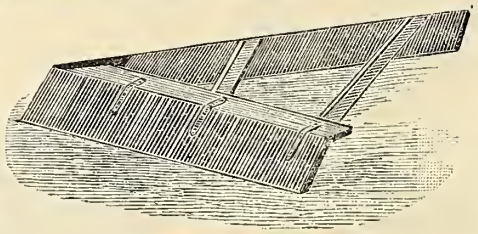
If you are to be a farmer, as the word is now understood, go to a healthful country having a fruitful soil. If you have capital, go where farming is most perfectly conducted. Purchase a highly improved farm, and let your capital put you at once into the possession of the fruits of the labor of those who made the country productive and healthful. If you have but little capital, go West, buy some land and grow up with the country, knowing if you make a living for the first ten years that reasonable wealth will come in due time. If you make a good location, buy all the land you can hold, and not fall into the "land poor" class.

I am often asked, as to the most desirable size of a farm. This must depend on the size of the man who is to own and conduct it. The present tendency is in the direction of large farms. Machinery costs much, and will do much, and its profitable use calls for much land. Small farms neither justify the cost of machinery that does work cheaply, nor the employment of much hired labor. So the sure result is, the occupant will have much hard work to do, with but little profit. The large farm gives employment to its conductor, in directing the work, and justifies a system of resident labor, performed by men having families living in houses on the farm, and boarding themselves. I once asked a very successful middle-aged farmer of many acres, as to the comparative profit of small and large farms, knowing that he began with a farm of about seventy acres, and at that time had about three hundred. His reply was that he had gone into debt for all his land, and had paid for it by its own productions, but that his progress had been very slow while he had but little land, and was faster as he increased his debt for more acres. This is a man of marked success. He was raised on a farm. A near-by Academy gave the facilities for a good education, and natural energy and ability enabled him to create capital out of his business. Very few men, in any business, do any better than such men do on farms. It is true that he has his cattle, and horses and sheep to take care of, and his men to direct, but this really makes less trouble than the management of most kinds of property.

So it comes to this—the man himself decides, as to the work he shall do in life, and while I do not deny, that "time and chance happeneth to them all," yet I confidently assert, that if to the industry, skill, and economy I have suggested as being necessary, there be added the aid of a wife in like manner endowed with these qualities, there is no manner of life so likely to insure success.

A One-sided Snow Plow.

Mr. E. E. Keller, Monroe Co., N. Y., has a snow plow that throws the snow all to one side, and on this account is very handy in many places. One side of the plow is made twice as long as the other, and by properly adjusting the draft, only the short side faces



A ONE-SIDED SNOW PLOW.

the snow. A sort of mould-board is fastened on this side with iron straps, as shown in the engraving.

A "Broken" Shaft for a Grindstone.

Mr. James Meyer, La Salle Co., Ill., having experienced the inconvenience of a long

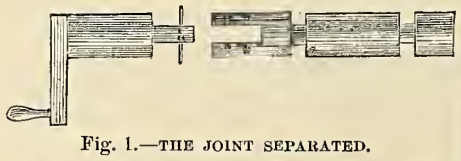


Fig. 1.—THE JOINT SEPARATED.

handle to a grindstone has provided himself with one that folds up and is out of the way when not in use. Figure 1 shows the "windlass" or shaft, removed from the stone. A slot is cut in the end of the shaft, about four inches from the turning surface, and the portion bearing the crank is made to fit into it, being held in place by a bolt and a wooden pin. When not in use the pin is removed, and the crank falls down out of the way, as shown in figure 2.

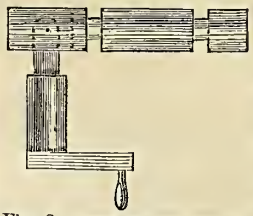
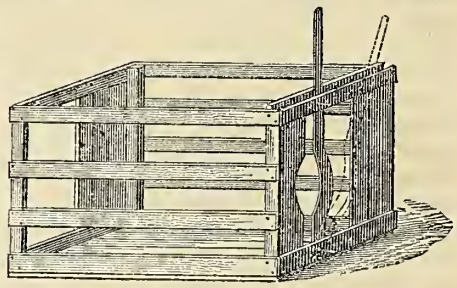


Fig. 2.—THE SHAFT TURNED DOWN.

A Pig "Trap" or Holder.

Mr. G. W. Fair, Edgar Co., Ill., sends a sketch and description of a device for holding pigs while being rung, which he has found very convenient. He writes: "The 'trap" may be placed at the end of a shute



A TRAP FOR HOLDING PIGS.

or passage-way, or by the side of a pen having a small door opening into the 'trap.' As the pig attempts to pass out at the opposite end of the 'trap,' a lever is brought up, and the animal is held fast by its neck."—The construction of the pig-holder, and the working of the lever, are made plain by the accompanying engraving.

Birds and Canker Worms.—II.

BY PROF. S. A. FORBES.

The species in whose stomachs no trace of canker worms was found, were the catbird, house wren, cliff swallow yellow-winged sparrow, chipping sparrow, field sparrow, crow blackbird, wood pewee, flicker or yellow hammer, and quail. It is worthy of remark that all but two of these species (catbird and pewee), were represented by only one bird each; and it is therefore probable that some of them would have been found eating the worms, if a greater number had been shot. The thrushes, blackbird, crow blackbird, and red-headed woodpecker, were the only ones found making any serious attack upon the predaceous beetles. The thrushes, as already mentioned, had eaten 12 per cent of these valuable insects; the bluebird, 60 per cent; the blackbird, 10 per cent; and the woodpecker, 38 per cent. Taking, now, the whole number of birds together, as one group, we find that canker worms had been eaten by 60 per cent of the *species*, and by about 64 per cent of the *birds;* and that they made 45 per cent of the food of all the birds taken in the orchard.

A more detailed statement of the entire food of these birds may not be without interest: Insects, 91 per cent; mollusks, 2 per cent; thousand-legs, 1 per cent; spiders, 2 per cent; wheat and seeds of grass and other weeds, 4 per cent. Caterpillars other than

canker worms made 15 per cent; leaf-chafers, 4 per cent; wire-worms and click-beetles, likewise 4 per cent; ants, 3 per cent; and snout-beetles, 1 per cent. Predaceous beetles (Carabidæ) amount to 5 per cent of the whole food. From these data it is impossible to avoid the conclusion that the birds were greatly hindering the progress of the canker-worm in this orchard.

A brief comparison with data previously published by me, will show that it was the abundance of the canker worm which attracted them to this orchard in such extraordinary numbers. In the third bulletin of the Illinois State Laboratory of Natural History will be found, among many others, tables of the food of the three thrushes mentioned in this paper, fifty which had been shot in May, in many localities, and in a great variety of situations. Only 13 per cent of the food of these fifty thrushes, thus taken at random, consisted of caterpillars; while these insects made 40 per cent of the food of the same species as represented by the birds shot in the infested orchard. The difference between 13 per cent and 40 per cent, measures the degree to which these birds had been diverted from their ordinary food by the excessive number of canker worms. Further, the bluebirds reported in the above-mentioned paper in the bulletin, had eaten but 12 per cent of caterpillars in May, while in the one shot in the Tazewell County orchard, canker worms composed 60 per cent of the food. Unpublished notes now in my hands relating to the food of the black-throated bunting, show that caterpillars made but 17¼ per cent of the food of thirty-one birds, shot here and there, in May and June; while they make 73 per cent of the food of the eleven specimens of this species reported in this paper. These facts can bear but one interpretation—that the birds were unconsciously but efficiently concentrating themselves upon the labor of reducing this injurious excess of an insect species to its usual limits. It is difficult to estimate the actual number of worms destroyed by the birds during the season, but it is evident that they must be reckoned by the hundred thousand.

The number of predaceous beetles eaten by a few of the species above mentioned, made it a matter of interest to learn what these beetles themselves were doing to the worms, as it was conceivable that the predaceous beetles taken, might, if left undisturbed, have destroyed more worms than did the birds which ate them. To get what light I could upon this matter, I critically studied the contents of the stomachs of twelve of the carnivorous beetles collected in the orchard. In two of these I found easily recognizable fragments of canker worms; viz., in one *Galerita janus*, and in one *Harpalus Pensylvanicus*. The other ten specimens belonged to four species—*Calosoma calidum*, *C. scrutator*, *Scarites subterraneus*, and *Chœnius diffinis*. The Scarites contained no food; the other species were all feeding upon the same class of objects, represented by very minute, irregular fragments of red-brown insect crust. There were no appendages or other structures in these stomachs to show definitely the character of the insects from which these fragments had been derived; and I can only surmise from their appearance and from the abundance of canker worms in the food of the birds taken here, that these were the insects indicated. At any rate, it is certain that only two of these twelve beetles had eaten canker worms; and, as nearly as can be judged from Mr. Garman's report of the number of predaceous insects in the orchard, they were doing relatively little for the destruction of the worms. But one parasite of the worm was noticed. It is therefore probable that, setting aside the intelligent interference of man, birds constituted the only important check afforded by organic nature upon the excessive multiplication of the canker worm.

The American Museum of Natural History.—Forestry.

But few New Yorkers, and still fewer of visitors to the city, seem to be aware that there is near Central Park, in fact practically on it, one of the finest museums in the world, so far as it goes. It is situated on 8th Avenue, near 77th street; and readily reached by Elevated Railroad. But one wing of the proposed building is yet erected, and this is filled with excellent collections, arranged in a manner that reflects much credit upon the Superintendent, Prof. Bickmore. We are glad to announce that the value of the museum is to be greatly increased by an admirable collection of Economic Forestry. This collection will include every tree belonging to the United States; the specimens will be large, and exhibit the wood in the rough, and finished, in a way to show its various uses. The products of the trees, and the various articles manufactured from them, will be included in the collection. As it is important that the leaves, flowers, and fruit of the trees should be shown with the woods, and as dried specimens are not satisfactory for popular instruction, an original water-colored drawing of these portions by an artist skilled in this work will be added.

That this collection is being made under the direction of Prof. Chas. S. Sargent, of the Arnold Arboretum, Harvard University, is sufficient assurance of the accuracy and value of the work. Good progress has already been made, and collectors are still getting specimens in Arizona, California, and other distant localities. It is safe to assume that this collection will have a value beyond that of any other of its kind heretofore made. The whole expense of this grand enterprise, which has already amounted to several thousands of dollars, is borne by Morris K. Jessup, Esq., a New York banker, whose liberality has been manifested in various other directions for the public benefit.

A Home-made Apple Pulper.

Mr. Geo. L. Rector, Wood Co., W. Va., makes his own cider, and grinds or pulps the apples with a machine shown in figure 1. It

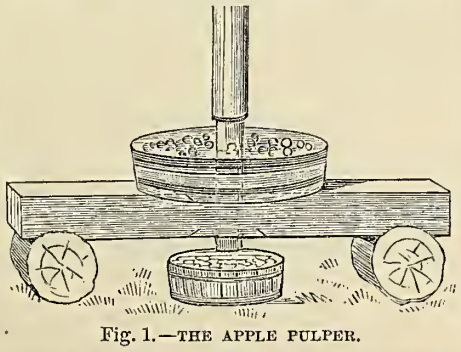


Fig. 1.—THE APPLE PULPER.

consists of a log 12 inches in diameter, and as long as desired, with a mortise cut in the middle as shown in side view in figure 2. The upright lever or "ram" fits in this mortise and is held in place by a stout pin. There should be ¾ of an inch space between the lever and the sides of the mortise, for the mashed apples to fall through into the tub placed below. A hopper, made of an old tub, is fitted upon the opposite of the log, and around the mortise into which the cider apples are poured. "With such a machine," Mr. R. writes, "a man can mash six bushels per hour, and work at a moderate gait."

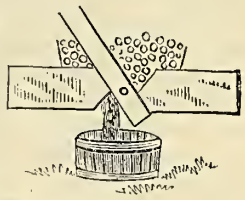
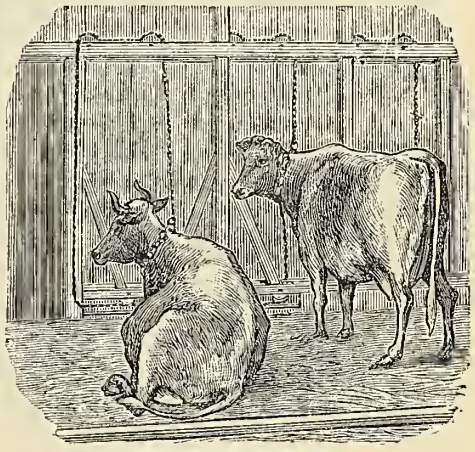


Fig. 2.—INTERIOR VIEW.

An Improved Tie for Cattle.

A friend in Bergen Co., N. J., in building a dairy barn for some 40 cows, has given much thought to the matter, and introduced every improvement that he thought would pay. When it came to the matter of fastening the animals in their stalls, he was much averse to the old-fashioned stanchion, and

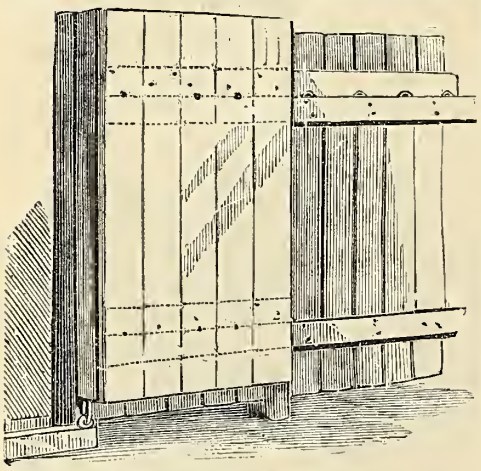


IMPROVED CATTLE-TIE.

while hesitating between this, and the upright rod with a sliding ring, to which there are also objections, he came across an account of the Improved Cattle-tie, recently invented by Mr. H. M. Robbins, Newington, Ct. Upon inspection of this he at once adopted it, and is now most enthusiastic in praise of its excellence as well as its cheapness. The affair is so simple that the wonder is that it had not been thought of long before. Each tie consists of an endless chain passing over four pullies, two upon the beam overhead, and two near the floor of the stall. The chain is so arranged that it cannot by any possibility slip from or be pulled off of the pulleys. A short chain passes around the neck of the animal and is attached to one of the upright portions of the endless chain. The arrangement allows the animal every desirable freedom of motion, whether standing, eating, or lying down, and while it is enabled to lick all parts of its body, it is not able to interfere with the neighboring animals. It is claimed to be, and appears perfectly safe, not only in the sense of security but in the avoidance of accidents. However they may be in reality, stanchions cannot be so arranged that they will not look uncomfortable, and to one who loves his animals it is worth something to see them in the apparent ease they enjoy here.

A Sliding Gate.

Mr. E. E. Keller, Monroe Co., N. Y., has a sliding gate in a tight picket fence, which is cheap, handy, and easily made. He writes: "In building the fence, the post to which a gate is to be hung, should be on the outside, and if the gate is more than four feet long, the second post should also be put outside of the pickets. A strip of hard-wood, $^7/_8$-inch square, and twice as long as the gate, should be nailed on the outer edge of the top of the 2 by 4-inch scantling, which makes the upper railing of the fence. Casters are placed at frequent intervals in the upper surface of this scantling, and should project about half an inch above the surface. The gate is made with its boards or pickets facing opposite to those of the fence, with the lower edges of the scantling twice as long as the gate, and a half inch higher than the upper surface of the fence. A $^7/_8$-inch strip is nailed on the under side of the scantling, to slide easily between the fence boards and the similar strip



A SLIDING CLOSE BOARD GATE.

on the upper side of the fence scantling, as shown in the engraving. These two strips should be bound with hoop iron. A 2 by 4-strip is placed on the front of the gate, with a small wheel on its lower end, which rolls upon a sill placed in the ground. The casters which I have used are from an old bedstead."

Barn Door Fastening.

One of the best barns in the country has its large double doors fastened by a bar of iron, about six feet long, which is bolted to one of the doors at its middle point. The ends of the bar are notched, one upon the upper and the other on the under side to fit over sockets or "hooks" that are bolted to

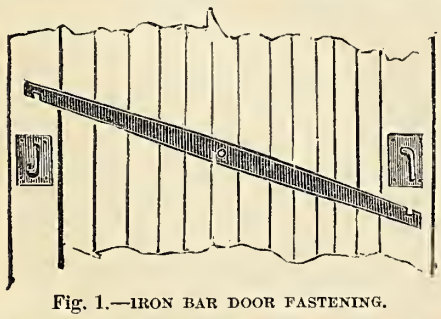


Fig. 1.—IRON BAR DOOR FASTENING.

the doors. One hook bends upward, and the other downward, and the bar moves in the arc of a circle when the door is being unfastened or bolted. The construction of this door fastening is shown in figure 1. A wooden bar may replace the iron one, and may be of a size and length sufficient to make the fastening secure. A wooden bar is shown in figure 2. Such a method of fastening could be used for a single door, provided it needs to be opened and closed only

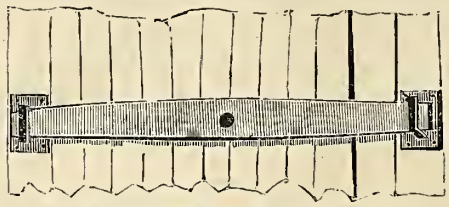


Fig. 2.—WOODEN BAR DOOR FASTENING.

from the inside. By putting a pin in the bar near the end that passes by the door post, so that it will reach through a slot in the door, such a "latch" might be used for any door.

A Corn Fodder Holder.

"X. Y.," Columbus, Ohio, sends his method of securing uncut corn fodder, which is shown in the accompanying engraving, made from his sketch. Fasten two staples with rings in the sides of the shed, each equally distant from the corner, two feet or a little less, and tie the end of a rope to one of the rings, while the other end of the rope is provided with an iron snap. The corn stalks are placed in a standing position in the corner, and the rope is brought in front of them and snapped to the other ring. The construction of this easily made "fodder rack" is easily understood from the engraving.

A FODDER HOLDER.

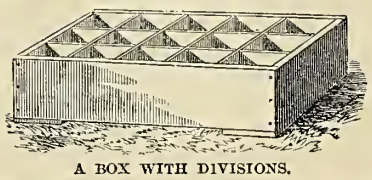
Cut-Worms in the Garden.

When one has set out in the well prepared soil of the garden the cabbage plants he has carefully raised, and a few mornings after finds that a large share of his plants is missing, the stems being cut square off near the ground, he says, "The Cut-Worm." He is in no mood to make entomological distinctions. The cabbages are killed by cut-worms, and to him there is but one kind—*the* Cut-Worm. In practical entomology the gardener classes insects by their work, and it makes no difference to him if there are three or four caterpillars, the larve of as many different moths, if he finds that their work is all alike they are all one to him in applying the remedy. If a cut-worm has cut the cabbage plants, it is possible to find its hiding place, dig it out of its hole, and put an end to its work. There is a satisfaction in knowing that this particular worm will cut no more, and that in killing it, future progeny is likely to be diminished. It would appear that cut-worms have been very numerous the past season, as we have had many complaints of their destruction of cabbage plants. Among all the complaints there came one suggestion of a remedy, or rather preventive.

It is old, but it is a long time since we referred to it, and it may be new to some of the young gardeners of the present day. It comes from J. F. T. B. Brentano, Marion Co., Oregon, who writes: "We Oregonians circumvent this pest, by wrapping a piece of paper around the stem of each plant as it is set out. The paper should extend a little distance below the ground, and as far above as it can go without interfering with the leaves." In speaking of the kind of paper, he suggests that rich people may use greenbacks, but poor ones must rely upon old copy books or even newspapers, but "the *American Agriculturist* will not answer at all for this use, as it should be kept," a conclusion with which we agree. That this method is effective we know, and we do not doubt that on a large scale it would pay, where the time required to apply the paper would cost less than to replace the plants destroyed. Several years ago some one wrote that he applied a maple leaf, in place of the paper, in planting a large field. The leaf of the Red Maple being chosen merely because it was sufficiently large at the time he put out the plants.

A Plant Box with Divisions.

Among the many devices to allow plants to be handled without disturbing the roots, we have seen none so simple as the one here illustrated in the figure below. A shallow box of any desired size is provided with partitions to divide it into square compartments. The bottom of the box, instead of being nailed on in the usual manner, should be small enough to slip *inside* of the frame formed by the sides and ends, and held in place by a few screws or nails that are not driven quite home. As many strips of straw-board are provided as will make the desired number of divisions. One set of these, should have a cut made from the center to the upper edge, and the set that crosses them should be cut from the center to the lower edge; this will allow the two sets to lock together. The compartments thus made being in place, they are to be filled with soil, and a few seeds sown in each, all the plants but one being removed when large enough to be well established. Or seeds may be sown in other boxes, and the plants, when large enough, may be transplanted to this, placing one in each division. When it is time to set out the plants, the box may be taken to the garden; the screws or nails that hold the bottom being taken out, the frame can be lifted off, leaving the squares of soil undisturbed. Each



A BOX WITH DIVISIONS.

one of these, if carefully taken up by means of a flat trowel or a piece of shingle, may be put into the hole prepared for it, without breaking a root fiber. Such boxes will answer where seedlings are raised in the window as well as in a hot-bed.

White Grub and Strawberry Borer.—J. Webster, Marion Co., Ill., writes that he and others have lost from one-fourth to one-half of their strawberry plants. The White Grub and the Borer that attacks the crown of the plant having been especially abundant during the late drouth. We have in recent numbers given the only method with the grub, *i. e.*, to destroy the beetles.

The Broad-Leaved Burning Bush.

There are some shrubs of really superior character that do not become popular, while related species, vastly inferior to them, are seen almost everywhere. The European Burning Bush, or Spindle-Tree, and the American, are often met with, while the Broad-leaved is still among the rarest of shrubs. Whether it is because the nurserymen do not offer it prominently, or because buyers of shrubs do not know it, we can not say, but we will endeavor to remove the latter reason by calling attention to its excellence as an ornamental shrub. It is a native of Southern Europe, and is said to reach the hight of 15 feet under favorable circumstances. As we have seen it, six or eight feet is its usual hight, and it assumes a dense bushy form, clothed with broad leaves of a dark rich green. The flowers, as in other species, are not conspicuous. The fruit is in clusters which are on long and slender foot stalks, and always droop. The exterior of the capsules is crimson, and the seeds which are shown when these open are bright orange red. This Burning Bush (*Euonymus latifolius*) retains its leaves later in autumn than the other species, and is a most beautiful object.

THE BROAD-LEAVED BURNING BUSH (*Euonymus latifolius*).

Thinning Peaches.—The account by a Michigan correspondent of his "first Peach Orchard," given elsewhere, calls to mind a request that we made several years ago, and to which no response was received. It was to this effect: it is admitted that a thorough thinning of the young fruit will prevent the evils to the tree consequent upon overbearing; it is also known that if the fruit is severely thinned, that which is left to mature will be larger and finer, but how much? In order to ascertain whether the operation will pay on the large scale or not, we asked for statistics, hoping that some of our peach-growing friends had compared the returns from thinned, and unthinned trees, and might be able to show in dollars and cents whether or not the fruit would sell for enough more to pay for the labor of thinning. We now repeat our request for facts on this point.

The Single Dahlias.

The illustrations of the single Dahlias given last month convey some idea of their appearance as cut flowers, but fail to show the ornamental appearance of the plant itself. In view of the fact that these plants are likely to become exceedingly popular in this country, where they will meet with a more favorable climate than that of England, we borrow from a recent number of "The Garden" an engraving showing the plant as it appears in the border. The engraving is from a photograph of a plant in the nurseries of T. S. Ware, Tottenham, Eng., where in the autumn of 1880 we first saw a collection of these Dahlias, and were impressed with their beauty and value. The variety here illustrated is the "White Queen," regarded as the best of the whites, and shows the compact form of the plant and its abundant bloom. Unlike the old tall double varieties, the plant can be sufficiently supported by a single stake which is readily concealed by the foliage. In the double kinds the heads are so heavy that they often require support, and when wet with rain will break down. In the single forms the long flower stalk has sufficient strength to hold up the flower, and display it to the best advantage while on the plant, and allow of its effective arrangement when cut. In this variety, the rays are large in proportion to the disk, and of a pure white, with great substance. The number of varieties of single Dahlias will no doubt be greatly increased when they come into general cultivation with us, as our long summers will allow of the ripening of its seeds in abundance. If the seeds are sown early, the plants potted singly, and turned out when frost are over, a large share will bloom the first year.

THE SINGLE DAHLIA—"WHITE QUEEN."

Grimes' Golden.—This apple was introduced by S. B. Marshall, of Ohio, who sent us abundant specimens; we figured and described it in Jan. 1867, giving Mr. M.'s description of the tree, with Dr. Warder's and our own of the fruit. This induced Mr. B. Scholl, of Wash. Co., Md., to make a trial of the variety. He writes: "The tree is a good grower on my soil, and the fruit is excellent for eating and for drying; it can not be excelled as a cooking apple by any variety in its season, which is from September to January. Besides it is a good bearer of *annual* crops of fruit."—We are glad to hear such a good report of a variety which we helped to introduce. Mr. Marshall claimed that his trees had not failed to produce a good crop annually for 18 years, and while we did not doubt his statement, we feared that the tree might not bear with equal regularity elsewhere, but the note of Mr. Scholl shows that

it does. This regular bearing is an important matter in an apple for family use; the usual way is, an excess one year and almost no fruit the next. In our original description, the quality was ranked as *best*, and Ellwanger & Barry, who are not given to extravagance in praise of fruit, say: "Of the highest quality, equal to the best Newtown Pippin." The original tree was standing in 1867, in Brooks Co., West Va., and had been known since 1804. In a selection, however small, of fruit for family use, we should include Grimes' Golden. It has stood the severest winters of northern Ohio without injury. The variety is now in all of our first-class nurseries.

Notes from the Pines.

It is a common impression that the beautiful autumn colors of our forest leaves are due to the action of frost. An observation of the trees during the past few months, in the vicinity of New York, must have shown those who hold to this idea, how little the frost has to do with causing the change of color. While were we suffering a drouth unprecedented in the experience of any now living, we had in October three mornings with severe frosts, and on at least one of these, ice was formed. These frosts were not followed by any change of color in the leaves; those upon the more tender trees were killed, and soon fell, while those that were uninjured remained as green as before. The long drouth had suspended the functions of the leaves and they had not yet ripened. After these frosts came slight rains, sufficient to refresh the leaves, and some weeks later rain came in abundance, and there was in November a fair display of the bright colors we look for in autumn..... Some time ago I mentioned to a friend that a great service was done to horticulture by the introducer of that grand late-blooming shrub

Hydrangea paniculata grandiflora.

The reply was: "Too common; anybody can grow it, and you see it everywhere."—I had always thought it to be one of the great merits of the plant, that anybody could grow it. I was somewhat surprised at the remark, as I had supposed that one of the objects of horticultural societies and rural journals was to create a taste which would lead to our seeing beautiful plants "everywhere."....I have occasionally seen this

Hydrangea Grown as a Standard,

a form to be commended, at least for a variety. A single stem is trained upright to a stake, and a head formed at the hight of about four feet, allowing three or four buds at the top to push, and rubbing off all that start below these; the upper buds will form branches and bear a large panicle at the end of each. After the flowering is over, these branches should be cut back to about three buds each; the next spring these will give a very full head and a great mass of bloom. Close pruning of this shrub, in whatever form it may be grown, greatly improves both the size of the clusters, and of the individual flowers, and I think that the change of the flowers from white to pink is finer than on unpruned shrubs. One advantage in the standard form is, the great clusters, when heavy with rain can not reach the ground and be soiled....This training of plants, that usually form bushes—as standards, is an

Interesting Occupation for the Amateur,

and useful too, especially to one whose window or greenhouse space is limited. The Heliotrope, for example, is so much better in this shape that one who tries it will not afterwards grow this plant in any other form. It requires no great amount of skill; a little attention as needed, and time will do the rest. Begin with a straight young plant from a cutting, and whenever a side shoot starts, remove it, allowing growth from the upper point only. Place a stake to support the stem, and take care that it grows perfectly straight. The whole object being to form a straight stem, all flower-buds should be pinched out as they appear. When the stem is three or four feet high, cut it back to the desired hight, usually two or three feet high, and allow as many of the uppermost branches to grow as may be desired for the head, suppressing all others. The future treatment consists in pruning in such a manner as to keep the head in a regular shape. Ordinarily the Heliotrope is a most unsatisfactory plant on account of its straggling habit of growth; treated in this manner it is easily kept in form, and it flowers freely; besides it saves room, as the head stands well above other plants.....Another plant suited to this training is the Lantana, a still more rambling subject; this, when grown with a clean stem, which bears a compact head, studded with its brilliant flowers, is indeed a beautiful object. There are many other plants which the amateur may train in this manner, and find much interest in shaping them to his will.....

The Tuberous-Rooted Begonias

have been rather slow in making their way to popularity. This may be due to the high price at first asked for the bulbs. If those who attempted to raise them from seed fared no better than myself, they may well have been disgusted. When seeds were first offered, I sent to a celebrated grower in France, and paid a round price for two packets of them. They came up freely, and the plants grew well; after caring for some dozens of plants for a year or more, they began to bloom, and every plant, without exception, produced small dingy-white flowers. But they all had beautiful *tubers!* Not a plant of the lot was worth keeping. Since then some of my friends have had fine success; the seedlings, some of them with enormous flowers, in various shades of scarlet, crimson, etc. Used in masses, they produce a fine effect, being equal in brilliancy to the best Geraniums, and superior to them from the fact that rains do not injure the flowers; after a heavy rain storm the flowers recover at once, while those of Geraniums are quite ruined, and the bed appears ragged until new clusters open. Besides, these Begonias can be stored so conveniently; they are allowed to dry off, and the tubers are kept until it is desired to start them in spring. They make very fine pot plants also.....I have heretofore suggested that in selecting shrubs for planting, we should not look to the beauty of the flowers solely, but include some that have showy fruit. A few clusters of bright berries lighten up the shrubbery wonderfully in autumn. Among shrubs with showy berries nothing can be finer than

The Common Barberry

in full fruit; the graceful curve of its stems and the pendent coral-like berries make it a charming object. A little species from Japan, Thunberg's Barberry (*Berberis Thunbergii*), only about two feet high, makes a neat compact mass of green, against which its berries, which are not in clusters, but solitary, large and bright scarlet, show with fine effect.....

The Scarlet Clematis of Texas,

which was figured in March 1879, has proved to be a valuable plant; it bloomed all summer, and was not checked by the severe frosts of early autumn. Its flowers are not very large, but they are so bright that every one who sees the plant is pleased with it.....I have wondered that we have in this country

So few Amateurs with Hobbies.

Those who devote themselves mainly or solely to one class of plants, and by giving their attention to these reach a perfection not otherwise possible. In Europe there are noted growers of the Auricula, the Rose, the Chrysanthemum, and many others, whose achievements have given them a wide reputation. What a splendid hobby the Clematis would be in all its species and varieties, and what a chance for still new floral prizes in the way of new beauties it offers!

"My First Peach Orchard."

A correspondent, "J. V.," Oakland Co., Mich., who has now over 3,000 peach trees, gives an account of his first orchard. We give this essentially as written, for two reasons; first: as an encouragement to others, as Oakland Co. is far from the peach-growing localities of the State, and it shows that even under adverse circumstances his land gave him fair returns. Secondly, for the purpose of suggesting some points in which the management might have been improved. Mr. V. writes: "Four years ago last spring, I planted 300 peach trees on poor sandy land, setting them 16 feet apart each way; all the trees lived. For the first two years I planted corn in the orchard, which gave a fair crop for such land. The third year I planted beans, which were a failure, but that year I had 20 bushels of peaches, which I sold for $2.50 per bushel. This year, the third, I discovered that the borer was injuring the trees, and I dug out of the 300 trees about 700 borers. Last year, the fourth, I did not plant any crop in the orchard, but cultivated the soil and kept it perfectly clean, and also hunted the curculio. I picked and sold 500 bushels of choice fruit, which returned me $600 clear, after paying freight and commissions. I made use of about 1,000 props, besides several balls of hemp twine to keep the trees from breaking down. The injury by the borers the third year, the heavy crop of the fourth, followed by the severe winter which we had in Michigan, together caused the death of about half of the 300 trees."—This experience is interesting, and it may be instructive to analyze it, and see what our correspondent made by the operation. Three hundred trees, at 16 feet apart, occupy less than two acres (which would hold 342 trees), but we will call the land two acres. We are not told what the returns from the corn were, but it is fair to assume that the two crops, and the $50 for the first crop of fruit, the third year, paid for the trees, their planting and all the cultivation, so that at the beginning of the fourth year, the orchard had paid all its expenses. Supposing that all the trees, instead of one-half, had been killed, the firs

wood would pay for the clearing the land, and give a profit besides. The $600 received for the fourth year's crop, gives the handsome showing of a yearly return of $75 per acre for each of the four years, which is probably much more than the land originally cost, and much more than what is regarded as an average return in the celebrated peach districts of Delaware and Maryland. This report is a particularly unfavorable one, for it is rare that a peach orchard does not give more than one full crop—yet what could J. V. have done with two acres that would have paid him better? In what respect could our correspondent have done better with his first orchard? He says that the soil was "poor and sandy,"—"sandy," so far as it means light, is well for a peach orchard—"poor" is not. While peach trees should never be put upon low wet lands, they should have what is considered good corn land. The growing of corn between the rows until the orchard comes into bearing, is regarded as good practice in the great "Peninsula" peach district. The second drawback was in neglecting the borer until the third year. Every tree, before planting, should have been carefully examined to see that none had already made an entrance, and every fall and spring thereafter, each tree should have been examined. The excessive crop of the fourth year, and the many props and the stays of twine indicate that the young trees had been allowed to grow at will, without any shortening of the branches to form a compact head. While peach-growers differ as to whether it pays to do any "cutting in," as it is called, after the trees fairly come into bearing, all agree that it is desirable to do this upon the young trees, and cut back, in fall or early spring, one-half, more or less, of the growth of the previous season. There is another point for peach-growers to consider; much time was expended in cutting and adjusting the 1,000 props, and "several balls of hemp twine" cost something, and time was consumed in applying it. Suppose that all these items of expense, in time and money, had been directed to thinning the fruit when small, would it not have been more profitable? We feel quite sure that it would have been, so far as the future of the trees was concerned. How it would have been in money returns for the fruit we cannot say. Of course the winter-killing, which was, in many localities, very disastrous that winter, could not have been avoided, though it might not have been so extensive had not the trees been exhausted by overbearing. We consider the experience of J. V. encouraging to those who, outside of what are regarded as peach districts, would like to experiment in peach culture.

Green Corn in England.—The directions for cooking green corn which appear from time to time in the English journals are very funny. The last we have met with says: "Boil the cob in milk for one hour, and then broil it, basting with butter and salt."—We wonder what is done with the rest of the corn while the "cob" is being treated in this manner, and what is done with the "cob" after it is broiled and basted!

The Variegated Panic-Grass.

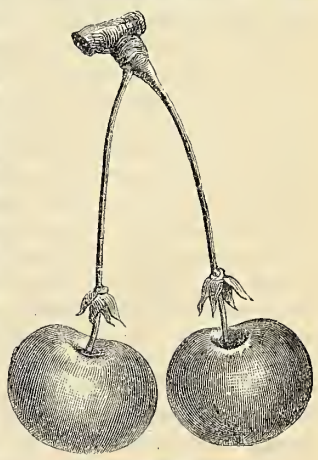
Plants that will flourish in the usually dry air of our houses are not numerous, and every one that will do this is worthy of note. The little grass, introduced from one of the South Sea Islands some years ago, as *Panicum variegatum*, is a capital basket or bracket plant. The grass has much the habit of the troublesome "Finger"—or "Crab-grass," its prostrate stem taking root at every joint. This creeps where there is soil, and when it reaches the edge of the basket or pot, hangs over in a graceful manner. The size and shape of the leaves are shown in the engraving, which, being from an upright stem, does not show the creeping habit. The leaves are light-green, with broad stripes of creamy white, and if the plant has sufficient sun, the foliage is tinged with pink. While the plant grows more rapidly in the damp atmosphere of the greenhouse, if well supplied with water it is very satisfactory as a window plant.

THE VARIEGATED PANIC-GRASS (*Panicum variegatum*).

The Cultivation of Peppermint.

A letter before us from Lancaster Co., Pa., is a specimen of many. The writer claims that he knows nothing whatever of the culture of Mint, or if it will succeed in his locality, and wishes us to tell him how to grow it. We believe and constantly advocate a mixed husbandry, believing it better, save in a few exceptional cases, than the plantation system with but one or two large crops. But in a variety of crops, we would not advise what, for the want of a better name, we call "special crops," that is crops that are outside of the usual farm products, and which can not be turned to account on the farm, but must be disposed of. Such crops, of which Peppermint is an example, are subjects of speculation, and if any one makes much out of them it is usually not the farmer, but a dealer. Another reason why we do not have more to say about such crops as Peppermint is, they can only be sold in the manufactured state. With Mint it is not the plant that is sold, but its oil, and to produce this of the best quality requires a kind of skill which the farmer's training has not taught him. It is safe to say that very few men, whether farmers or not, however intelligent, could on the first trial succeed in producing a first class Oil of Peppermint, and this is the only kind that can be sold. It is true that much money has at times been made by growers of Mint, but statistics show that, taken a series of years, the land in one of the celebrated Peppermint districts did not produce an average of much over $30 an acre. We hear of the profits when they reach $300 an acre, but the average crops do not get into the papers. It is because we feel that we should not benefit the farmers by it, that we do not encourage these unusual crops. Here and there one may make it fairly remunerative, but we are sure that the failures in the case of Peppermint would greatly outnumber the successes.

For One Cherry—"The Kentish."—"If you have room for but one pear tree, what variety would you plant?"—The answer to this in ninety-nine cases in a hundred would be—"Bartlett." A similar question about cherries would be answered by those familiar with varieties by—"Kentish." One can form some idea of the value of a fruit by the synonyms, or different names that have been given it. The "Kentish" has over a dozen other names. It has been largely planted in the Western States as "Early Richmond," and some experienced fruit growers still consider that as distinct from the Kentish. In some localities it is known as "Early May." The tree has a rounded, spreading head, is very productive, and bears regularly. The fruit begins to color towards the end of May, when it is small and very sour, but may be used for pies; it hangs on the tree through the month of June or later, increasing in size to medium, and becoming less acid, and very juicy and rich. This variety is characterized by the clinging of the remains of the flower to the stem, as seen in the engraving, and the tenacity with which the stem holds to the stone. When quite ripe, the stone may be pulled out by means of the stem, leaving the pulp ready for drying or canning, for which uses it is unequalled. It is an old European variety, and may be found in all nurseries as Kentish or as Early Richmond. It is an exceedingly profitable market cherry.



THE KENTISH CHERRY.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Household Plants—Why not a Palm?

The term "Household" in preference to "House" plants is used on purpose. We have seen, and no doubt the reader can recall, plants which seemed as much a part of the owner's household effects as any article of furniture. Such a plant is kept in the family year after year; it is among the earliest recollections of the children, and when the household is broken up, it goes as an heirloom in the division of the estate to a son or daughter, who cherishes it for the associations connected with it. Formerly a Laurestinus or Pittosporum was the favorite plant, or it may be an Orange or a Lemon tree, of which the mother had planted the seed when a girl. Sometimes an Oleander answered the purpose, which could be put in the cellar on the approach of winter, to be brought out in spring for its annual summer bloom. We do not now see plants of this permanent character so often as formerly. It may be that the substitution of coal stoves for open fires has made it more difficult to keep them, or it may be that the greater ease with which more showy plants of brief duration can be procured, has led to the neglect of those of a more permanent character. The plants we have mentioned are well suited for the purpose, and, as they occasionally bloom, are more interesting to many than those which do not flower. To our notion elegance of form in the plant itself is vastly to be preferred to a brief yearly flowering. We know of nothing that we should prefer as a household plant, one that is to be a companion year after year, to one of the half-hardy palms. A graceful palm, each leaf of which is a study of the beautiful in form, is pleasing every day in the year. One advantage is its slow growth, and its appropriateness wherever it may be placed. It may stand at the window or in a corner of the room, or it may find its winter quarters in the hallway, or on a stair landing. Any place where it will not freeze, and where it has a share of light will answer. In summer it may ornament the veranda, or it may grace the lawn, either by itself or as the center of a group. Those with fan-shaped leaves, like the Southern Palmetto, or the European Fan-Palm (*Chamærops humilis*) are among the more hardy kinds, but they spread and take up more room than some others. Palms of the genus *Phœnix*, to which the Date Palm belongs, are much used in Europe for home decoration; they are of exceedingly graceful habit, and do not spread so widely as some others. The one given in the engraving, to show the general appearance of these palms, is *Phœnix sylvestris*, often called the "Wild Date." The true Date (*P. dactylifera*), makes a good house plant; we have known them to be raised from the stone of the imported fruit, and after some years become quite elegant specimens. If one wishes a palm, and can afford to wait, it can not be had cheaper than to plant some date stones, which we have known to grow even in the open ground. Not many florists keep a stock of palms, though some, foreseeing the growing taste for such plants, are prepared to meet it. Small specimens of desirable species may be had at 50c. to $1; really fine plants may be had for $5 and upwards. One, in purchasing a palm, will do well to rely upon the florist to select the kind best suited to home culture, as it is not the rarest and most costly that is best suited to the treatment it would receive.

A GOOD HOUSEHOLD PLANT—THE WILD DATE.

Our Graham Flour.

BY A MINNESOTA HOUSEKEEPER.

There is a low growl here and there over the quality of the Graham flour most common in the market, but few seem to care very much about it. I dislike to be almost the only one to scold in public about the outrageous swindle practised upon the buyers of Graham flour, but it does seem to me that protest ought to be made. Things have come to such a pass that the only genuine Graham flour I can get has to be brought from Ohio, and I have to pay six cents a pound for it, since the recent rise in all wheat breadstuffs. It has grown more and more difficult to get unbolted flour from Minnesota wheat. It is offered at four cents a pound (three cents until lately), but I do not want it at any price. My neighbor sends to New York and buys flour manufactured by the "Health Food Co." from our Minnesota spring wheat. It is called "cold blast whole wheat flour," and purports to be the whole wheat minus the thin clean woody bran. It seems to me exactly what we might get right here at home very much cheaper, if we *could* get genuine unbolted flour made by the "new process," and sift out the bran ourselves, or if the millers would give us this and keep their bran. The new process of milling gives us much more nutritious white flour than we used to get by the old process. "Grinding high," instead of setting the stones close together, peels off the bran without any appreciable gluten attached to it, so that the bran cannot now be very nutritious food for cattle, it seems to me, and I do not see how it adds value to Graham flour, except when bran is needed as a mechanical irritant to torpid bowels. As wheat was formerly ground, and is still in many eastern mills, much of the grain remained attached to the bran.

The middlings purifiers take the canaille, or shorts, and remove therefrom both starch and gluten, which, added to the fine white flour of the interior of the wheat kernel, make a greater bulk and a more nutritious quality of fine flour than could be produced by the old process, or without the middlings purifiers. Much used to be said by health reformers against superfine white flour as a steady article of diet, but the white flour of the present is much more nutritious than that in use several years ago, owing to the addition of gluten caused by the use of the middlings purifiers.

But "the worst thing about this new process is that it spoils the Graham." This is what a proprietor of one of our best mills told his wife—and she told me. I wondered why, but I think I understand. It is very evident that the Graham flour we get now from our home mills has been robbed of the starch portion, and I more than suspect that it is mostly a mixture of bran and the refuse of the middling (or shorts) after these have been "purified," and the better portion added to the fine flour. Sometimes pure white flour may be added, sometimes corn meal, and sometimes (I should think) the sweepings of the mill!

No, I don't want it. But I do want good Graham flour, however good the white flour may be. I believe we should have a better article of diet for our daily bread (if it is really to be a "*staff* of life") in flour made by grinding high, and so peeling off a clean bran, and only the woody bran sifted out.

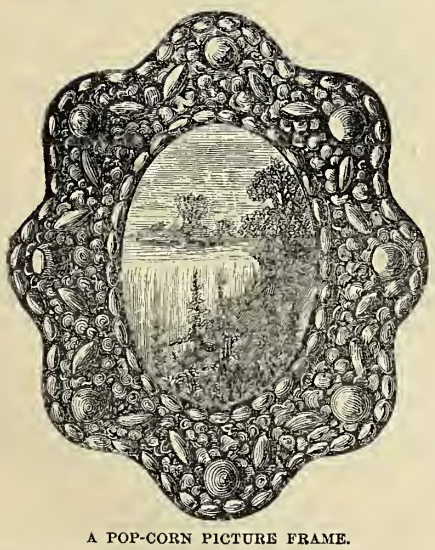
Good Graham is a very convenient thing to have in the house. I have to make a great deal of bread to feed my family, and this business is made much more easy by making a part of the loaves from Graham (all but the sponge set over night—this from fine flour) as there is no kneading about it, the light sponge being only stirred thick (and thoroughly) with Graham and a little sugar. Then there is the mush, so convenient to make in a hurry and so good for the children. And gems! Since we have been getting the Ohio Graham we have gone back to plain water gems, and they seem so delicious that we make them from choice, even when we have good buttermilk in the house. Nothing in the world beats Graham flour and water made in a soft batter, dropped in hot-buttered gem irons, and baked in a hot oven. For a long time these had been for me a "lost art," but I see now that the Graham (so-called) was in fault. When we first came to Minnesota we could get excellent Graham (our hard spring wheat unbolted) from country old style mills, and I dare say there are places where it could yet be obtained, but I know of none.

Consider the Children.—While I am writing this two little boys with thick shoes on, are galloping on canes back and forth through this room and the kitchen, playing horse. They are pretty noisy, but I think I can stand it for a little while. It is a rainy day, and they need exercise. I know a little

girl who is so helpful and thoughtful in her way that it would be an easy matter for an inconsiderate parent, to defraud her of some of her childish rights. The other day her mother was much surprised to hear her exclaim earnestly: "O dear! I *do* want a pretty doll as big as R.—'s. I should like to make its clothes so much! Why, mamma, I am growing older all of the time, and by and by I *can't* play with dolls." And she burst into tears. The mother saw the whole situation at once and replied: "Dear child! You shall have a doll. If you were to live a hundred years you never would be a little girl again. You shall have a doll and time to play with it too." It cut her to the heart to see how the patient little stocking darner and dish-washer rejoiced in the prospect of her new and pretty dolly. F. E. R.

A Pop-Corn Picture Frame.

A neat little frame, suitable for a card-ortrait or a small picture, makes a pleasing and useful article for a present. The one we have in mind was called a Pop-corn Frame, because that grain was largely used in making it, but a variety of other grains and seeds may be employed in the same manner. The frame in question was first cut out of thin board, but in the absence of that, stiff paste-board will answer. A row of cherry stones was fastened on both the outer and inner edge of the frame with strong glue. Then a Hazel-nut was put at each scollop; some plum stones were placed here and there, and the remaining space filled with pop-corn of the red variety, all fastened with glue. The fruit stones should be well cleaned, and the frame will look all the better if these have a coat of varnish before the corn is put on, that being sufficiently bright without varnish. This manner of covering a frame is given as a suggestion, but it may be varied, according to the materials one has at hand. Beans of different colors, and other seeds,



A POP-CORN PICTURE FRAME.

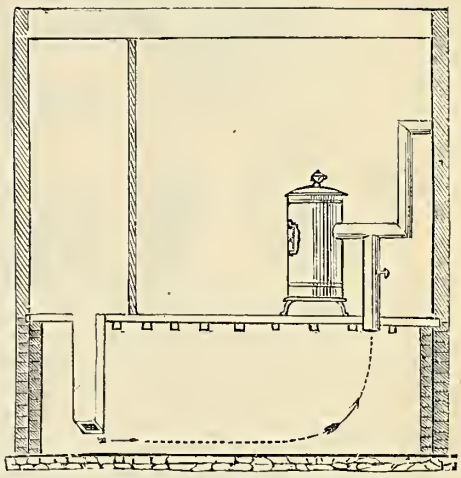
such as those of the Castor Oil plant; Beech-nuts, Chinquapins, very small Acorns, and other things will answer for the larger objects, while the pearly Rice Pop-corn, as well as the little bright yellow variety, will answer if the red kind is not at hand. One with a little ingenuity will find no difficulty in producing a pleasing effect. Glue for such uses should be very strong; it is easily made thus: Place in a tin cup some pieces of good cabinet-maker's glue, and pour on enough cold water to well cover them. Set in a cool place (away from the fire), over night, or long enough for the pieces to swell up and become limber. Then pour off all the water that will drain away, and set the cup in another dish in which is some water. Set the whole on the stove and allow it to heat gradually. The pieces of glue will dissolve in the water they have taken up; the solution, or made glue will be very strong, and must be kept hot while using by placing the cup in a larger vessel containing hot water. If more water should be needed, it may be added hot and a very little at a time.

Frost Bites and Chilblains.

Probably no other forms of accident or injury come upon us so unexpectedly as those due to excessive cold. As a general thing we are not aware that a part is being frozen until the mischief is already done. This is due to the fact that one of the effects of severe cold is to destroy the sensitiveness of the parts exposed. Surgeons make use of this fact in small operations and cool the parts by artificial cold. The ears, the nose, sometimes the cheeks, and the hands and feet are the parts most liable to be frozen. One of the first effects of freezing is to stop the circulation of the blood, and any part in which the circulation is checked by other means is all the more likely to be frozen. The old-fashioned skates, held on by numerous tight straps across the feet, are dangerous on this account, as to keep them in place the straps are drawn so tightly as to impede the circulation in the feet, and frost-bitten feet are often the consequence. Though the operation of freezing is painless, a sudden thawing is attended with inflammation and great pain. The thawing should be very slow in order that the circulation in the parts may be restored gradually. For this reason it is advised to rub the frozen parts with snow, or in the absence of that, with water made as cold as possible with ice. It is said that in Russia, when one observes that another's nose or face is being frozen, it is an act of common politeness to catch up a handful of snow and apply it to the face of the unfortunate, even if he is a perfect stranger. In cases of severe freezing, besides gradual thawing by the use of snow or ice, a physician should be called, as it may be that proper precautions are needed to prevent mortification of the parts. It is not necessary for the feet to be actually frozen to produce chilblains. The term frost-bitten is usually applied to such cases. Children often suffer greatly from getting their feet very cold, and then going to the fire to warm them. The circulation is disturbed and the parts remain exceedingly sensitive to future changes of cold and heat. Chilblains vary from a slight inflammation, to severe cases in which the skin breaks and even ulcers are formed. Of course such cases require professional treatment. To allay the intense itching and pain of ordinary chilblains, a great number of applications have been used. An ounce of Sulphate of Zinc (White Vitriol), in a pint of water, or an ounce of Sal Ammoniac dissolved in half a pint each of Vinegar and Alcohol are among the washes often used. It is stated on good authority, though we have not had occasion to try it, that the application of ordinary kerosene oil is very efficacious in allaying the itching and pain.

Ventilating a Cellar.

A correspondent, "J. P. F. K.," in Grand Forks Co., Dak. Terr., writes: "I have a small frame house, underneath which is a cellar nearly full of vegetables of various kinds. As some of these are needed daily through the winter, the storing them in a root house, which, owing to the intense cold here, must be kept closed during the winter, is quite out of the question." He asks: "How can I ventilate the cellar thoroughly, and at the same time exclude the frost." As no plan is given of the house or cellar, we must assume that the cellar extends under the whole house. Moreover, we assume that, being in a new country, stoves are used for both cooking and heating. To get rid of the foul air in the cellar a communication must be made between the cellar and either a chimney in which there is a constant upward current of warm air, or it may be made with the pipe of the stove. A piece of stove-pipe should pass



METHOD OF VENTILATING A CELLAR.

through the floor, and terminate just below it in the cellar. The end of the pipe in the room above the cellar may turn into the chimney, or if that is not practicable or desirable, it may connect with the stove-pipe. This upright pipe, which passes from the cellar, is to be provided with a damper. The cellar being thus connected directly with a flue, or indirectly with it by means of the stove-pipe, in either of which is a strong upward current, may be deprived of its foul air in a very short time. It will not be necessary or desirable that the ventilation be kept up continuously, hence the damper is put in the ascending pipe. This should be opened a short time daily, or as often as the condition of the air in the cellar shows it to be necessary. The diagram will suggest the arrangement where the connection is made with the stove. But if foul air is taken from the cellar, it must be replaced by other air from without. In a climate where the cold is continuously severe, it will not answer to bring the outer air directly into the cellar, as its contents would be frozen and spoiled. It may be well to provide for the admission of the outer air during mild spells, if such occur in the locality; this may be done by making a small opening in one of the cellar windows, that may be closed by a sliding shutter. If the air without is too cold, then the supply must be taken from the house itself. This should be done from a point as far distant from the exit pipe as practicable. The hall or entry-way may be the most convenient place, but anywhere will do if the air is not too warm or too cold.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

The questions that come to me cover a wide range of subjects. What can be more unlike than the last two?—Here is "B. F. W.," who wishes me to tell him why certain kinds of corn pop, and a young friend in New Jersey wants to know all about frost and snow. Probably one of the first crops raised by boys on a farm is pop-corn, and boys soon learn that pop-corn is different from common corn. It is usually a hard, flinty kind, with the kernels much smaller than the kinds of field corn.

What Makes it Pop?

Chemists who have examined Indian corn, find that it contains all the way from 6 to 11 parts in a hundred (by weight) of fat. By proper means this fat can be separated from the grain, and it is then a thick pale oil. When oils are heated sufficiently in closed vessels, so that the air can not get to them, they are turned into gas, which occupies many times the bulk that the oil did. When pop-corn is gradually heated and made so hot that the oil inside of the kernels turns to gas, this gas can not escape through the hull of the kernels, but when the interior pressure gets strong enough,

It Bursts the Grain,

and the explosion is so violent that it shatters it in the most curious manner. The starch in the grain

Fig. 1.—POP-CORN UNPOPPED AND POPPED.

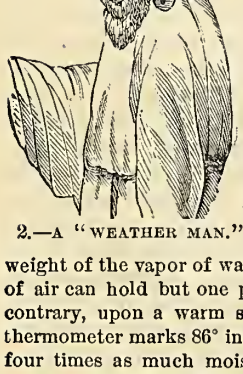
becomes cooked and takes up a great deal more space than it did before. The other day I came across a kind of pop-corn, the ears of which were 3 or 4 inches long, and no larger than my finger, called "Miniature Brazilian." The grains, fig. 1, were the smallest I have seen. I popped some of it, and give you a drawing of the size of the grain before and after. I think, however, that some of the larger kinds increase much more in proportion.

In Popping Corn,

you need to heat it at first gradually, until the grains are well warmed through, and then suddenly increase the heat by bringing the popper nearer the coals, of course keeping up a lively shaking....It often happens that in answering a question I must talk about something else first, in order to prepare the way. This is the case with Frost and Snow, as they depend upon being formed from

The Moisture in the Air,

without which we could have neither. When the books tell us that the atmosphere consists of oxygen and nitrogen, they do not state the whole truth, as there is always a variable amount of water in the air; this is invisible, but nevertheless present. The amount of moisture that the air can take up varies with the temperature. When the weather is so cold that water will freeze (32°), then the air can hold but the 160th part of its own weight of the vapor of water. That is, 160 pounds of air can hold but one pound of water. On the contrary, upon a warm summer's day, when the thermometer marks 86° in the shade, it can contain four times as much moisture, or the 40th of its own weight, and one pound of water can be taken up by forty pounds of air. When the air has all the vapor of water it can hold at any temperature, it is said to be *saturated*. The amount, or as the books have it, "the capacity of air for moisture," depends upon the temperature. This is an important point to remember. As just stated, by making the air 54 degrees warmer, that is, raising it from 32° to 86°, it will take up four times as much water. Air that is damp at one temperature, will be very dry at another, although it really holds just the same amount of water.



2.—A "WEATHER MAN."

"How do we Know the Air is Moist?"

some of you will ask. If you fill a pitcher with ice-water, taking care to have the outside of the pitcher perfectly dry, you know that the outside will soon become moist, and after a while drops of water will trickle down, and if the pitcher stands on a paper or in a dish, a large space on the paper will be wet, or a small quantity of water will be caught in the dish. Those who do not examine closely say that the pitcher "sweats," but I think you can understand that this water all comes from the air around the pitcher, the cold surface *condenses* the moisture. That the air contains more moisture at one time than another can be told in part by the effects upon our feelings; when the air contains but little moisture, the skin seems dry, and the hair dry and harsh. It can be made visible by various instruments, called

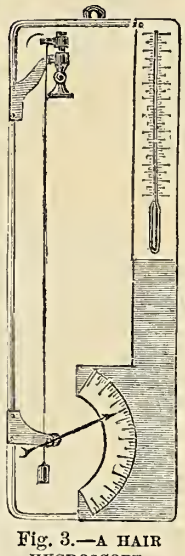


Fig. 3.—A HAIR HYGROSCOPE.

Hygrometers or Hygroscopes,

the latter name being the most correct, as these affairs are not really *meters*, that is, they do not actually measure anything, but they only show that the moisture in the air varies from time to time. Hygrometer is made up of the Greek words for *moisture* and *measure*. Hygroscope, from the words for *moisture* and *to view*, or *see*. I said that dry air would affect your hair, as that is very sensitive to moisture, and it is used in making the most delicate Hygroscopes. Figure 3 shows one of these, in which a long hair is stretched in such a manner that it can move a pointer along a scale. In a damp day the hair will be longer than in a dry one, and the movement of the pointer shows the difference. Hemp, flax, cotton, and other fibres are affected by moisture in a similar manner. You have no doubt noticed that a clothes line which was quite slack when dry, becomes very taut when damp, and even breaks when wet by the rain. You can make a rough

Home-made Hygroscope

with a piece of common twine. In order to show the changes distinctly, the string will need to be several feet long. You can fasten one end near the top of the room, and arrange the pointer low down; figure 4 will show how the pointer is made. You have no doubt seen those toys, where there is a little house with two doors and small figures of a man and woman; on a damp day the woman moves in and the man comes out, and when it is dry they change the order of their going. These are often called "barometers," but they are only hygroscopes, in which the movement is caused by the action of the moisture of the air upon a string of some kind. These are sometimes made in the form of a figure with a hood (fig. 2), which is pulled over the head on damp days and falls back in dry ones. As the air is often very damp for some time before a rain storm, these figures show that to be the case, and this is all that they can do in foretelling the weather. To come back to our question about

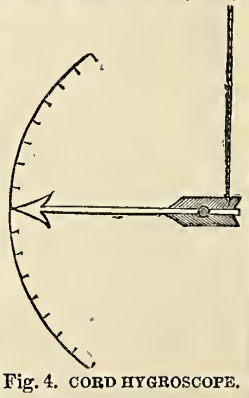


Fig. 4. CORD HYGROSCOPE.

Frost and Snow.

We have already seen that the air contains the vapor of water, or moisture, and that cooling the air will cause it to let go, or deposit a part of it as water. When the moisture of the air is deposited quietly and it collects on cool surfaces, we call it *dew*. If a current of warm moist air meets one of very cold air, the moist air is cooled, and can no longer hold its vapor, which condenses and form drops which fall as rain. If the object, the grass, the fence, or the bare ground becomes so cool that the moisture freezes as it falls, we have frost. When you get up on a very cold morning, you find the windows of your bed-room covered with frost, and so are the windows of other rooms if there is not heat enough to warm the glass faster than it is cooled by the air on the outside. This frost on the windows comes from the moisture in the air of the room. As dew, when the temperature is very low, appears as frost, so the moisture that would otherwise come down as rain, freezes and

Falls in the Form of Snow.

I have all along assumed that you knew that ice was water made solid by cooling. "Everybody knows that," you will say. I admit it, but everybody does not know that when water becomes solid its particles arrange themselves in a regular form, and make crystals of definite shape, with always just such angles. I can not just now show you how that we know the solid ice is made up of crystals. If you watch for a fine dry snow, when the flakes are scarcely to be seen in the air (a few such snows usually occur every winter) and catch the little flake on a black cloth, you will find them of the most beautiful and regular forms. There are a great many things that pass from the liquid to the solid state—common salt, alum, blue vitriol, and many others, which may be dissolved in water, and be made to take on the solid form again and appear as regularly shaped crystals. It is well known that the more slowly these crystals are formed, the more regular and perfect they will be. If they be made to become solid quickly, they are a shapeless mass. Rock-candy, you know, is in

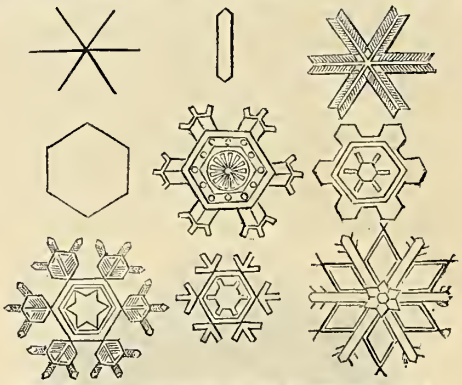


Fig. 5.—VARIOUS FORMS OF SNOW CRYSTALS.

handsome, regular, clear crystals; a piece of loaf or lump sugar shows no distinct crystals—yet both are the self same sugar, and the one can be changed into the other. The only difference between rock-candy and lump sugar is, the one had time to form its crystals very slowly; the lump sugar became solid suddenly. We have reason to suppose that the beautiful little crystals of dry snow are formed slowly, while the great white flakes, which you like to see, because they promise sleds and coasting, are made by the sudden cooling of the moisture, and many imperfect crystals stick together and form large flakes as they come down through the air.

Our Puzzle Box.

COMPOUND METAMOREMS.

(Last month we gave you simple metamorems; we make them a little more perplexing now, by letting the figure 8 stand for the word "ate," or "ait"; 1, for the letters "o-n-e"; 10, for "ten," etc.—*Example.* 5001=Done. 71608=State. 1900-10160=Intent.

1.	10009.	4.	1000150.	7.	190010500.
2.	20001.	5.	3000557.	8.	1001900250.
3.	429008.	6.	40015500.	9.	2000900500150.

SQUARE WORD.

1. An animal that we sometimes eat.
2. A flowering shrub.
3. An animal that we do not eat.
4. A vegetable.

EFFIE.

CROSS WORD.

My first is in finished but not in done,
My next is in scamper but not in run,
My third is in plump but not in fat,
My fourth is in mouse but not in rat,
My fifth is in river but not in lake,
My sixth is in tremble but not in quake,
My seventh is in grain but not in wheat,
My eighth is in lane but not in street,
My ninth is in beard but not in hair,
My tenth is in round but not in square,
My eleventh is in cattle but not in herd,
My twelfth is in sentence but not in word,
If good, as can be, we want to live,
My whole we may take but must not give.

BIBLICAL NUMERICAL ENIGMA.

I am composed of 42 letters:

My 1, 11, 15, 28, 7, 37, 3, 36, 23, was a Syrian idol.

My 8, 30, 22, 16, 5, 19, 31, 38, 13, was a Roman province.

My 20, 3, 35, 27, 41, 12, 32, 9, 25, was a surname of two disciples.

My 29, 1, 20, 16, 33, 2, 26, 4, 31, was an ancient article of armour.

My 39, 10, 6, 27, 21, 17, 4, 14, 40, was a town of Galilee.

My 42, 24, 11, 18, 15, 34, 6, 9, 25, was a ruler of a Jewish Synagogue.

My whole is part of a verse of the Bible. ISOLA.

PATCHWORK.

(Find in each of the following sentences, the letters necessary to spell the implied word.

EXAMPLES.—1. You can discover it a distance. *Answer.* Yonder. "Far" would not do, as there is no f, in the sentence. 2. You are a gosling. *Answer.* Young.)

1. Boil it if you like, or eat it raw.
2. You would not like to wear it.
3. Be very careful how you make it (not *cake*).
4. A brown paint made of soot.
5. Too dark for us to read.
6. Catch all the horses with it.
7. I found the poor animals here (not "field").
8. You can carry them in this.

PI.

Istude luflidel ear swayla slaperuse ot het my rome. Elfs-liarneec si equit tinsdict orfm fels notressia.

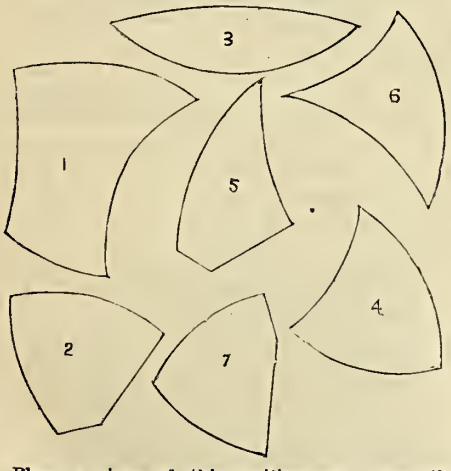
FOUNDATION WORD.

Recalcitrate.

(EXPLANATION. All the letters of the word "recalcitrate" are used in each sentence. EXAMPLE.—the *** sat ***** upon the ****. *Solution*—cat, erect, rail).

1. The guest drank some *** and ate some ****; and when he left he gave the waiter a *****.
2. The sky was so *****, that we could ***** ** for quite a long distance.
3. It excites my *** to see how the ****** are crowded into the ***.
4. They could find no ***** of the *******.

DIAGRAM PUZZLE.



Place a piece of thin writing-paper over the above diagram, and trace upon it with a lead pencil, the figures seen through the paper. Then cut them out of your paper, carefully, and trace each piece of paper upon cardboard. Cut out the seven pieces of cardboard, and put them together so as to form a correct circle of two and a half inches diameter. AUNT SUE.

TRANSITIONS.

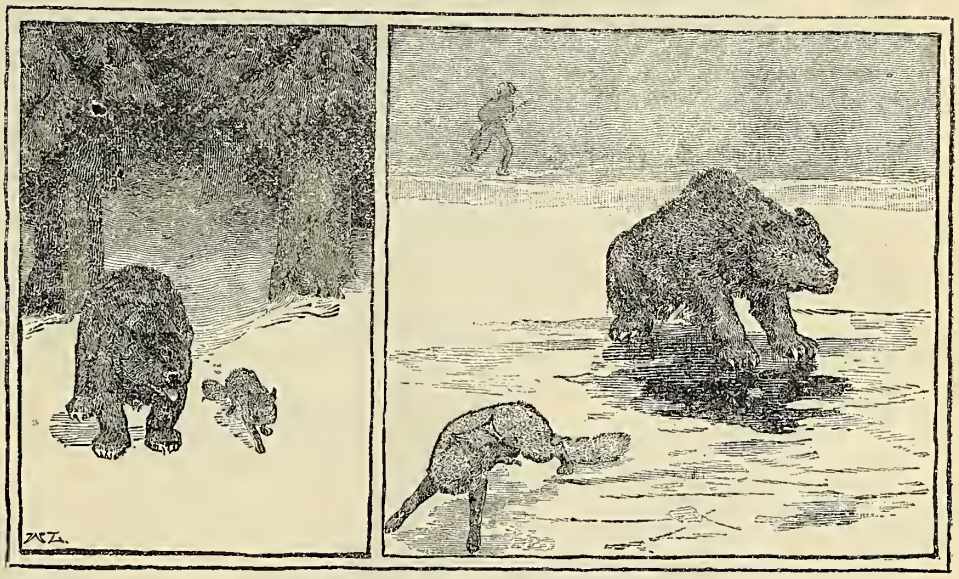
(Change only one letter at a time. EXAMPLE. Change wine to milk in three moves. Wine—mine, mile, milk.)

1. Change boat to land in five moves.
2. Change dawn to noon in four moves.
3. Change boot to shoe in four moves.
4. Change rain to snow in nine moves.
5. Change lawn to silk in ten moves.
6. Change pink to blue in fourteen moves.

HAND IN GLOVE.

(The "hand" is formed by heheading and curtailing the "glove."—EXAMPLE. To consume, in a shrub. *Answer.* Eat, heath).

1. An animal in: to lessen.
2. An animal in a flower-bud.
3. An animal in portions.
4. A bird in humble.
5. Keenness in a book.
6. An animal in a receptacle.
7. An animal in a disagreeable expression.



HOW REYNARD LED BRUIN INTO A FISHING TRAP.

ANAGRAMS.

1. Name in a cent.
2. Bone us out.
3. Ah! these?
4. A Nile item.
5. A pert corn.
6. After curd.
7. Snip more mint.
8. I did set his gun.
9. To permit no nap.
10. Nice sport to it.

Answers to Puzzles in the November Number.

CROSS WORD.—Napoleon.

AMAGRAMS.—1. Dissatisfied. 2. Domestic. 3. Successor. 4. Sentient. 5. Abnegation. 6. Appreciated. 7. Influential. 8. Noiseless. 9. Coöperate. 10. Lethargic.

NUMERICAL ENIGMA.—Children obey your parents in the Lord, for this is right.

DIAGONAL.—DaNiel, DOrcas HaNnah, HorAce, StelLa, GeralD=*Donald.*

HIDDEN VERBS.—1. Eat. 2. Sing. 3. Run. 4. Drag. 5. Tow. 6. Bleat.

RIDDLE.—Be, bee, beef, fees.

TRANSPOSITIONS.—1. Churl, lurch. 2. Charm, march. 3. Snipe, pines. 4 Bears, sahre. 5. Heaps, shape. 6. Parts, strap, traps.

DOUBLE ACROSTIC.—*Vashti—Smyrna.* 1. Vesuvius. 2. Abraham. 3. Sorcery. 4. Hagar. 5. Teman. 6. India.

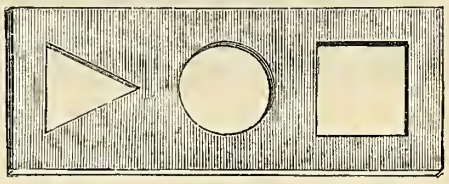
ENIGMATICAL BOUQUET.—1. Harebell. 2 Cowslip. 3. Foxglove. 4. Lady's Slipper. 5. Marigold. 6. Larkspur. 7. Phlox. 8. Morning-glory.

The Fox and the Bear.

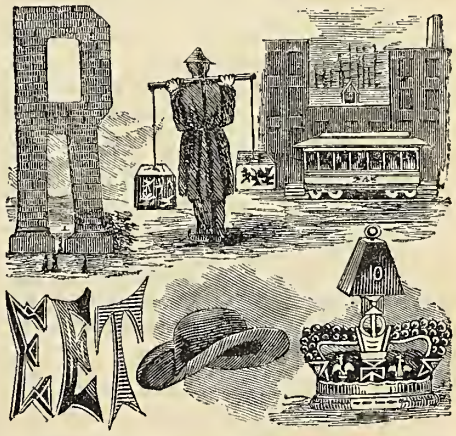
The Fox has a way of doing things that has made him the type of cunning or slyness. He plays strange tricks with the hunter, who with gun and dog seeks to secure his skin, and its soft fur. He also leads some of the other wild animals into tight places, and by sharp forethought gets the better of his foes that are many times his size. The picture here given shows how a fox entrapped a great bear. The story runs something like this: One day in winter a fox and bear met in a great forest and the fox told the bear that he had a new method of catching fish, which was so good that he had never failed to obtain all the fish he wanted whenever he had tried it. The bear was glad to hear of this, and at once accepted the invitation of the fox to try his hand—or tail rather—at fishing. They both journeyed along in great glee until the lake was reached, when the fox, finding a hole in the ice, told the bear he must put his tail through the ice and into the water, that the fish might bite it and be drawn out. Perhaps the young reader will think that a bear's tail is not a very long thing, but a good story must not be spoiled by the shortness of a tail. The bear having adjusted himself to his work, the fox told him the catching was simply a matter of time. After several hours the fox returned to his most patient—we will not say stupid, pupil, and found him engaged in a fruitless attempt to remove himself from the ice in which his tail had been frozen. A few words passed between Reynard and Bruin; the fox explained how a very cold day was not the best for fishing, etc., but in the heat of his address was interrupted by the approach of a hunter, who, coming up, found the bear not only alone but also an easy victim. Bear meat was plenty in one hunter's home that night, and Reynard told the exploits of the day to his family, and the little foxes laughed themselves to sleep over the sad fate of Poor Bruin who would a fishing go.

A Plug Puzzle.

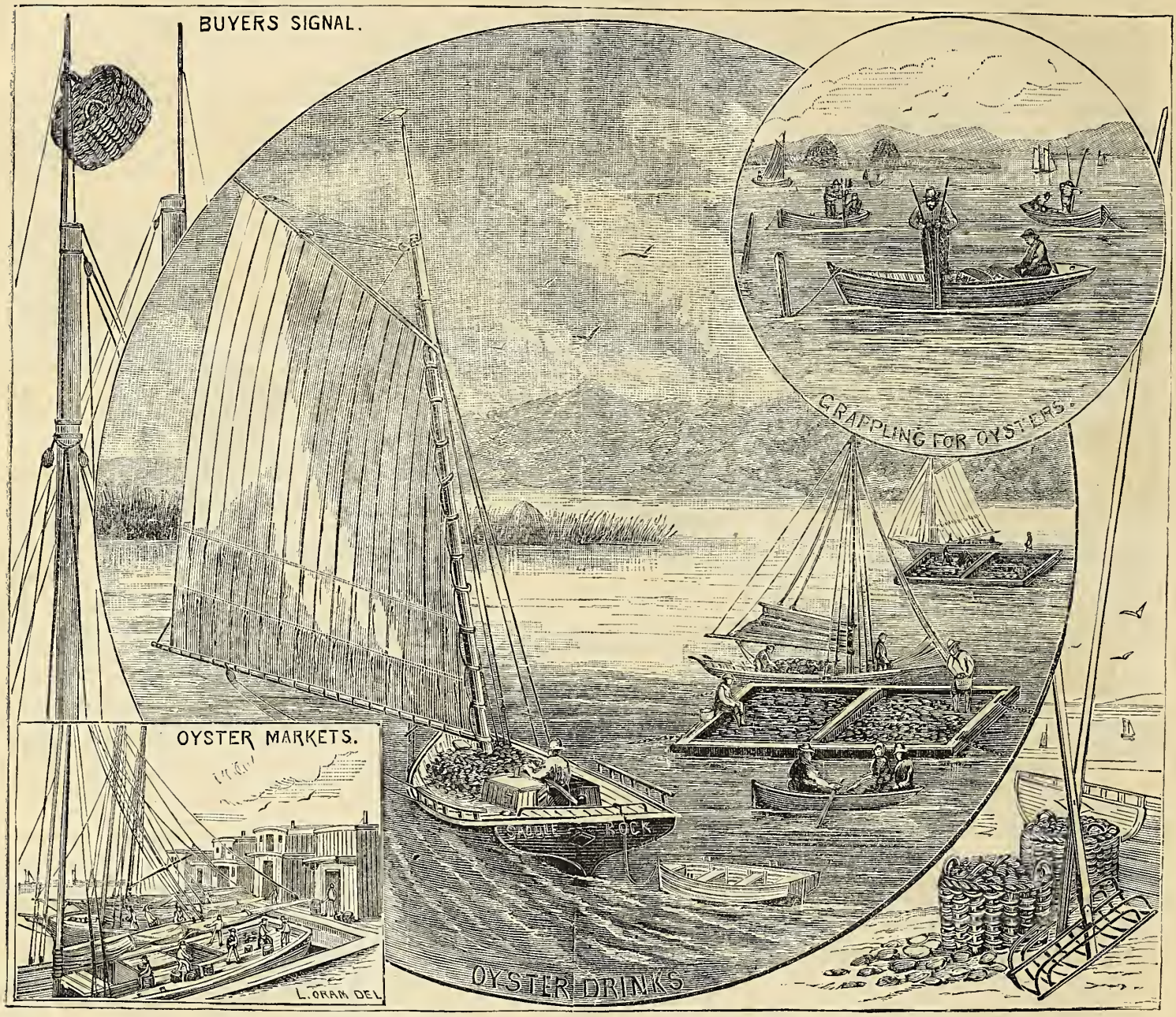
"M. A. M.," sends a cut for the puzzle department which he describes as follows: "Take a thin sheet of brass (sheet iron, wood, leather or paste board would do as well), and cut three holes in it—



one an inch square, another a circle one inch in diameter, and a third in the form of a triangle, an inch from the middle of any of the three sides to the opposite angle. The puzzle is to cut a solid block of wood so as to perfectly fit each of the three holes, and yet pass entirely through.



Illustrated Rebus No. 489.—Thoughtful words in pictorial clothing to all who in any way aspire to the life "enjoyed" by royal personages.



OYSTER FARMING AS PRACTISED ALONG THE ATLANTIC COAST.

Oysters and Oyster Farming.

The oyster is a strange sort of an animal. Children, and many grown folks too, when one speaks of an animal, think of a cow or a horse, or some large creature, because these are the largest and most familiar to us. All forms of life belong to either plants or animals. A rosebush is a plant, and a goat is an animal, but it is not always so easy to tell to which braneh or group of living things an objeet belongs. There are many plants that move from plaee to plaee by their own action, and there are animals that are as mueh attaehed to the rock or earth upon which they grow as a tree is. If the boys and girls should just here ask me to tell the differenee between an animal and a plant, I should be obliged to say, I do not know. I ean tell a horse from a maple tree, but these are extreme cases. Most persons can tell the color, red from blue, but the red approaches blue through many shades, and in the same way the blue shades into the red, until one may be sometimes at a loss to know where the red ends and the blue begins.

All this talk is to show you that all animals are not alike in having those things that are common with the most perfect and higher forms of animal life. The Oyster is an animal without legs, and therefore cannot walk; it has poor eyes and eannot therefore enjoy the secnery of the world in which it lives. The oyster was never known to stumble and fall down stairs, and experience the pain of a broken bone, and for very good reasons. The early life or childhood of the oyster is now well known. It grows or hatches from an egg that is so small as to be seen with diffieulty. No boy would think of carrying oyster eggs to market in a basket, or bring them home from an egg hunt in his hat. After hateling, the young oyster swims about for a time, after which it may be said to "settle down to business," and attaches itself to some hard object where it remains for the rest of its existenee. The oyster feeds upon the sea water. I take it for granted that all the young readers knew that the oyster, perhaps most familiar to many as the leading element of a very exeellent soup, is a water animal, a "shell fish," as it is sometimes called. The young oyster, at three months—the age when human babies have their pieture taken now-a-days—is not larger than a pea; they are not of sufficient size for market until in their fourth or fifth year.

But what is this "oyster farming" mentioned in the title? How can an animal that grows in the ocean be a farm crop? Is it possible that oysters are planted and cared for in a way that a field of corn is grown? Until recent years an oyster bed—by which I mean a portion of the bottom of the ocean where oysters grow—was eonsidered free property. Much as bad boys look upon a melon pateh—the first eome the first served. At present oyster beds are owned, and the crop is actually planted and grown. There are a great many such eultivated oyster beds along the Atlantie Coast. When the "seed" has been planted, as young oysters, in the bed, they grow rapidly, that is for such slow going animals as oysters, and become plump and fat, and in striking contrast to the poor and slender oysters that have grown in unfavorable places. The oysters are harvested by means of oyster tongs. The oyster men go out in small boats over the beds and bring the oysters to the surface and into the boats. As the oysters come from salt water, they are naturally charged or filled with sea water, and more or less bitter and unelean. To fit them for the table they must be "floated," that is exposed to fresh or partly fresh water. The "floats," or "drinks," are large boat-like struetures, 30 to 40 feet long, 2 feet deep, with openings and holes, in whieh the oysters are plaeed and are washed by the fresh water coming usually from the mouth of an inflowing river. After a few days the oysters become freshened and are ready for the market. Where they afterwards go I will leave for the young reader to imagine. To say that the oyster figures largely in stews, fries, and other foods would not be taken as an untruth.

The engraving shows something of the oyster farming near New York. Two "drinks," are shown in the eentral picture. The method of eatching, or grappling, the tools in oyster farming, and a market scene oeeupy the corners. UNCLE HAL.

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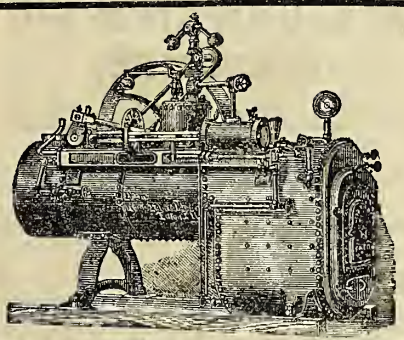

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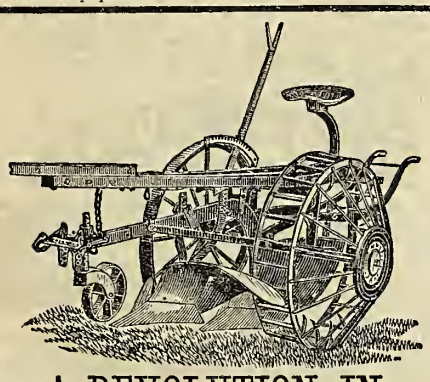

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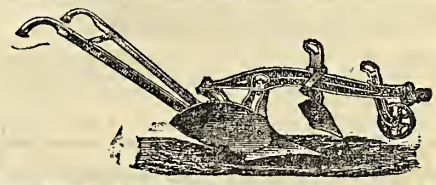

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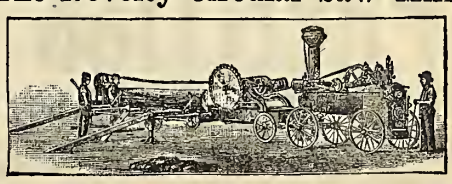

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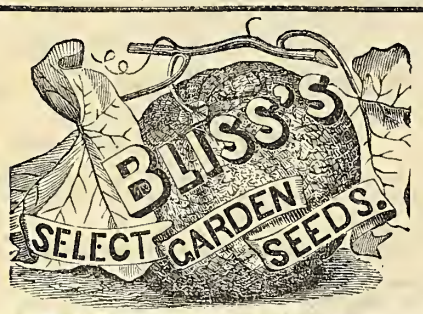

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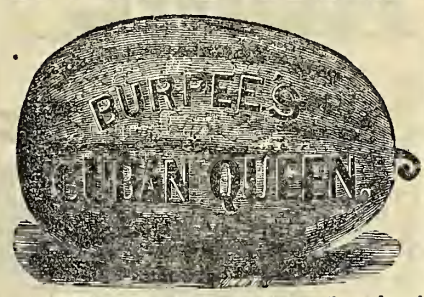

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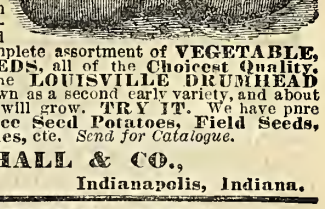

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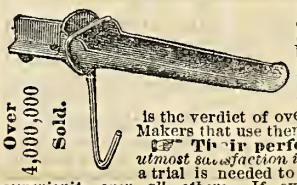

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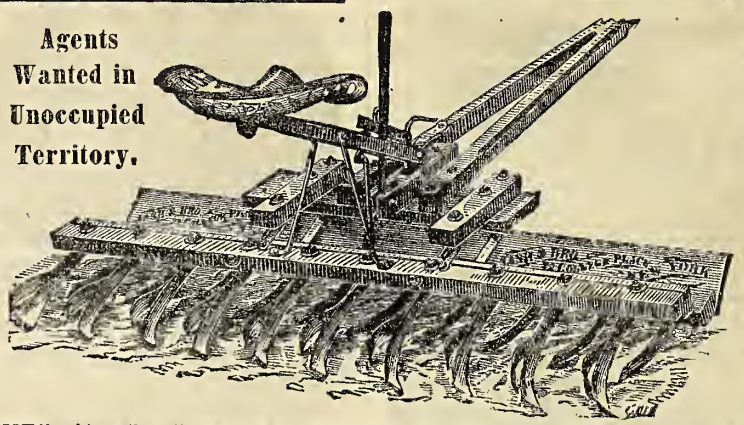
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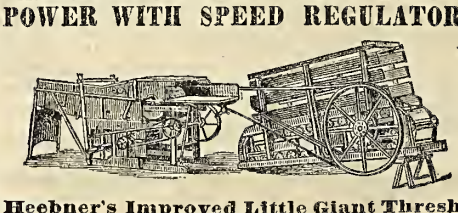
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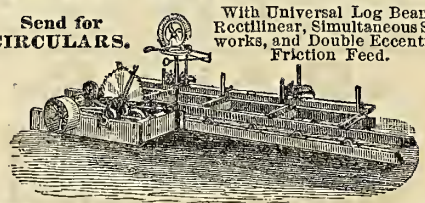
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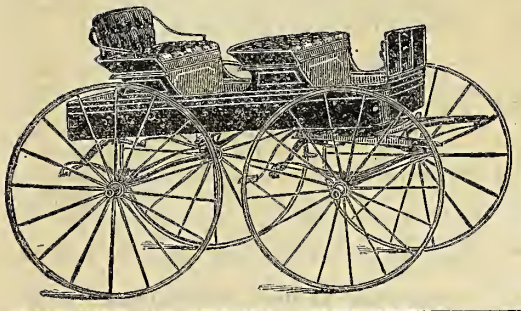

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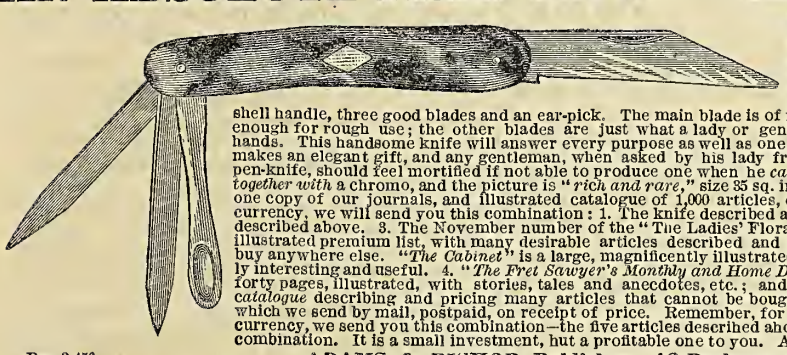

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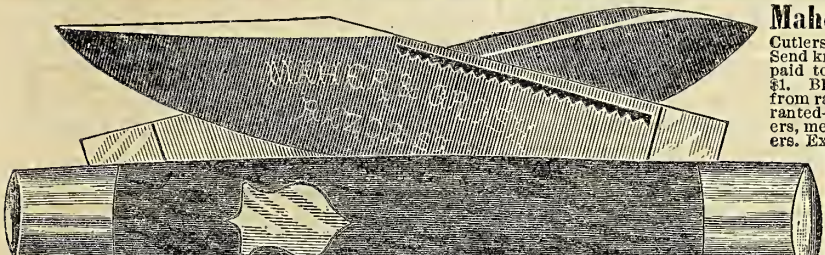

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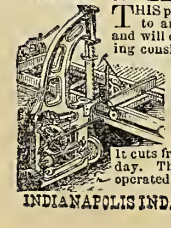

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Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

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Terms to New South Wales, New Zealand, Australia, Europe, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates (postage included), see page 42, and reckon the shilling sterling at 22 cents.

A New Seed Firm.—The firm of Thorburn & Carson, having dissolved in September last, the business will hereafter be continued by the firm of Thorburn & Titus, at the former location, 158 Chambers Street.

Rabbits and Fruit Trees.—"T. W. B.," New Rumley, Ohio, writes that he finds perfect protection in the use of Lard, one pound, and Crude Petroleum, one ounce, melted together. A piece of old carpet or other stuff, is saturated with this mixture, which he rubs upon the trunks of the trees, to give a very light coat. He states that it is effective against mice as well as rabbits. Various offensive substances will drive off rabbits, and we have no doubt that the odor of crude petroleum will do it. But has our friend tried it long enough to ascertain what may be the ultimate effect of applying so much grease to the trees. We give this, as we do many other things, upon the statement of our correspondent. A very slight application of oily material may not injure the tree, but on young trees especially we should advise caution in its use.

A Red for Roofs.—"A. C.," St. Mary's, Ga., asks for a recipe for staining or coloring the shingles on outbuildings red, as oil paint is too expensive. We know of no "stain" that will answer the purpose, that would be cheap. Some of the Mineral Paints are dull red in color, but they are merely a more or less impure oxide of iron which will not remain on the roof without a drying oil. If any one can help our friend in this matter, we shall be glad to hear from him. If red is not especially desired, a few applications of crude petroleum will greatly increase the durability of the shingles, and give them a pleasing, warm, brownish color.

At the Beginning of the Year.—We would say a word to the many new subscribers. In overhauling accumnlated letters at the end of the year just closed, with the view of the disposing of the correspondence so far as practicable, we were surprised at the number of utterly useless letters. These, while they cost the writers from hnt one cent (Postal Cards) to three cents, in the aggregate count up a nice little sum. They are of no use to us, as we de not know who wrote them. The letters are often very full in those matters of interest to the writer, but omit the signature. Three-fourths or more of these letters and cards are upon matters of no interest to any other person in the world save the writers; and such letters, whether signed or not, we do not answer in the paper. It is a fixed rule to answer no merely personal inquiry in "The Basket." We give here no replies unless they are likely to be of use to a number of readers. These nameless letters, for the reason that we can not reach the writers, go to the waste-paper hasket, and have to be sold hy the pound. We ask our new-comers to recollect that it is only in very rare cases that any notice is taken of an unsigned letter. We do not publish the name if the writer desires to remain unknown. In such case he may use any name he chooses, but the *real name* must always be given. In the coming year we trnst that our friends will remember this request, which is made as much for their benefit as for onr own.

The Echo Farm.—This noted dairy farm, of which we gave a description a few years ago, has, as we are informed by its former proprietor, Mr. F. Ratchford Starr, passed into the hands of a joint stock company, with ahundant capital. The future address will be "The Echo Farm Company."

Crops in Washington Territory.—From its far northwest situation we are accustomed to look upon Washington Territory as a cold and hleak country. On the contrary, its winters, especially on the coast, are remarkably mild. A correspondent, "R. S. H.," writing from Lopez Island, a part of San Juan Co., says that the deepest snow he has known was in 1879, when 27 inches fell, but it remained only three days. The land upon the Island is peaty, Oats, Barley, and Potatoes heing the main crops. Oats yield from 40 to 100 bushels to the acre, and weigh from 26 to 42 lbs. to the bushel. Barley runs from 50 to 100 hush. to the acre. Potatoes vary all the way from 70 to 400 hush. to the acre, 100 heing the average crop the present year. Wheat, which is not extensively raised, gives from 25 to 60 bush. to the acre. During the winter it rains three to six days in the week. In mid-summer there are often drouths of six week's duration, hut during this time there are heavy dews every night, and vegetation does not suffer. This letter confirms the testimony of other correspondents as to the agricultural capabilities and prosperity of this Territory.

Nice Cooked Celery.—Thanks to the efforts of this and other journals, celery is now far more generally raised for home use as well as for the market. But the past dry autumn greatly stunted the growth, often entirely ruining the crop. It is scarce and high in the market, and short-stemmed, the stalks being greener and tougher than usual. On this account alone cooking it may well be resorted to, though it is always preferred cooked hy a good many people, and if properly done is better thus, especially for all not possessed of effective mastication. The following method, new to us, we like very much, and more of the unblanched portion can be used, the extreme upper part being necessarily rejected, because always stringy and bitter. Chop it very fine, as fine as small peas. Put it into a sauce-pan, adding just enough water to cover it, and put on a tight lid. Boil ½ hour, or until perfectly soft. Leave the water with it, and add an equal hulk of milk, raising it to hoiling. For each pint of the minced celery, take a large tablespoonful of butter, more if desired, and thoroughly mix it dry with two tablespoonfuls of flour. Add this to the celery until thoroughly incorporated with it, and cook a trifle. Salt to taste, and pepper if desired.

Squash Bugs.—"W. N. A.," Starkville, Mass., sends a hint which our readers may do well to remember until next spring. He advises to place boards on edge to make a circular or other inclosure around the hill. Within this is to be placed a toad, provided with a shingle so placed as to afford it shelter from the sun during the day. As the bugs and toads both feed at night, he says that there is a lively time between them after nightfall. He states that the gardeners near Paris pay 15 cents (probably *centimes*) for toads to use as bug traps.

Spanish Chestnuts.—"C. W. G.," Bergen Co., N. J. What are sold in New York and other cities as Spanish or Italian Chestnuts, are the fruit of the European Chestnut, *Castanea vesca*, of which our native Chestnut is now regarded as a variety. The European tree has much larger fruit, hut it is not so sweet as ours. The tree is a little less hardy than ours, hut succeeds in the climate of New York and southward. It is kept in all the principal nurseries. In Europe there are several varieties, differing in the size of the nuts, their abundance, etc. Our own Chestnut varies greatly; we know of one tree that has nuts nearly as large as those from Europe, with the superior quality of our own. If you could get the nuts before they get dry or mouldy, and preserve them in sand, they would probably grow.

"My First Peach Orchard."—The author of an article with this title, given on page 22, writes that he omitted to give the date at which the pruning or cutting back should be done. While the superfluous shoots are to be removed as they appear, any time during the summer, he prefers the last of August or the first of September for the general shortening of the season's growth. This is an important item in peach culture, especially in forming the heads of young trees. It prevents the growth of long, weak branches, and also diminishes the weight of fruit.

Bee-keepers' and Other Conventions.—As autumn is the season of fairs in which cultivators of all kinds show what they have done, so winter is the time for conventions, in which special cultivators get together, tell what they have done, and how they did it, and what they intend to do, and how they propose to do it. These winter conventions are often of much interest and importance; it is a time of comparative leisure, when the members are not in a hurry to get home, and we get the results of the year's work of the various specialists. We are always glad to give notice of these conventions when permitted to do so, but when, as in case of the Michigan Bee-keepers, the notice of their convention, to be held early in December, reaches us only in time for our January issue, what can we do? We can only make use of this case to show to the Secretaries of all other such associations the necessity of sending the notices *early*—as soon as the time of meeting is decided upon. We do not like to be placed in the position of appearing indifferent to these meetings, as we are, when the notices come hut a few weeks before the time. The announcement for a meeting in February should reach us the first week in January, and so on. Will the Secretaries please take notice?

Birds and Grapes.—C. Lauppe, Champaign Co., Ohio, has much trouhle with the birds, which destroy his grapes. The Robin, the Cat-hird, and the Jay do much mischief, but the Oriole is the worst enemy, as it cuts a hole in the herry to get at the jnice, and one will soon injure all the fruit on the vine, while the others take the whole berry and soon get their fill. Mr. L. has had the best success in the use of small steel traps, which he baits with some hlue variety, such as the Ives. He does not care to catch the birds, as the snapping of the trap scares them away. Though Mr. L. has upwards of 70 varieties, he says, if confined to a single variety, it would be the Concord. He lays down his more tender varieties, and finds it pays to do so. The vines are laid upon the ground between two pieces of scantling, and covered hy a board, or by laying corn-stalks over them. Vines need protection not so much from the cold as from the long continued influence of drying winds, and Mr. L.'s manner of covering accomplishes this.

Prof. Asa Gray.—A wide circle of friends will be glad to know, that America's great botanist has returned after more than a year in Europe. The visit abroad was not merely for recreation, but to make such studies and comparisons in European herharia as will aid in the completion of the "Synoptical Flora of North America," so happily begun.

Old Postage Stamps.—Nonsense is long lived. There was some years ago an item in the papers to the effect that if old postage stamps were accumulated in large quantities, millions we think, they could be sold for a large price. Residence of buyer not stated. This absurdity every now and then crops out, and we have inquiries concerning it. Old postage stamps may be worth all the way from one to three cents a pound. That is they will bring the price of the poorest kind of waste paper—the only use to which they can honestly be put.

The Mammoth Tree in England.—The evergreens of our Pacific Coast are quite at home in England, and are a wonder to any tree-lover who visits that country. The "Big Tree" of California, *Sequoia gigantea*, barely exists in the Atlantic States, while in England it is one of their most rapid growers. A recent "Gardener's Chronicle" reports one, planted in 1857, when it was but two feet high, which is now fifty-six feet in hight; the trunk at two feet from the ground is eight feet and seven inches in girth. It is almost worth the ocean voyage to see the vigor and beauty of the "Big Tree" in a congenial climate.

Hops and Manures in England.—The "Gardener's Chronicle" gives several items from the "Agricultural Returns," for 1880, but does not state whether there has been a general census, or one relating to agricultural products only. We learn that the land devoted to Hop culture is 64,943 acres, of which 41,476 are in Kent. Manures of all kinds, including guano, hone, etc., were imported to the valne of over eight millions of dollars. England does not raise enough of the "tearful onion" to supply the wants of the people, hut pays two and a half millions of dollars to make up the deficiency. Besides she pays over half a million of dollars for imported pickles, in salt and otherwise.

Cabbage Worms Once More.—"J. R. S.," Rowayton, Conn., says: "Pour boiling water upon Tansy, making the infusion very strong. When cool, sprinkle the infested plants with it, giving the worms enough of it. I have tried it and found it effective."—We add this to the other remedies already published, and have no doubt that it will be useful if applied in time. The great difficulty is, that the applications are not made soon enough. When the cabbages begin to head, the worms can hide, when nothing will be of use.

American Apples in England.—Messrs. Materne & Mayer inform us that their latest advices show a great decline in prices. Boston Baldwins sold in Liverpool on the last days of November at 9*s* to 14*s*, the demand heing light and the fruit arriving in poor condition. At these prices there can be little profit to any one.

Wild Cherry for Stocks.—"Inquirer," Dutchess Co., N. Y. The wild Black Cherries, of which there are two, with small fruit in long clusters, like those of currants, is too unlike the cultivated cherry to answer as stocks, and all attempts in this direction have failed. There is a wild red cherry (*Prunus Pennsylvanica*), with its fruit in umhel-like clusters, like those of the cultivated, that has been used as stocks; and the little Dwarf or Sand Cherry (*P. pumila*), but a foot or two high, has been used for stocks to form dwarf trees.

"Are Artichokes Good for Swine?" writes one of our friends. He certainly can never have seen the catalogue of Mr. E. F. Brockway, Ainsworth, Iowa, who gives a very full account of the feeding value of the tubers, and gives ahundant directions for their cultivation. He does not describe the method of harvesting, as the animals who do that need no instruction. It may he added that Artichokes are not commended for fattening, but for growing swine. Experience ahundantly shows that while corn is the fattening food, the Artichoke is of great value in building up a frame on which to place the fat.

Gypsum—Plaster of Paris.—"Amateur." When Gypsum, or crnde Plaster, is heated to 272°, it loses the water it naturally contains, and becomes Plaster of Paris. Though the operation is often called "burning," it takes place at a comparatively low temperature. When mixed with water, it re-unites with that, and becomes chemically the same as it was before, and when re-ground, is probably as valuable as a fertilizer as the "raw stone." We say "probably," as we are not sure that it is quite so soluble as at first, though it is not likely that there is any perceptible difference in this respect. The usual time for applying Gypsum on clover, is in spring, when vegetation is just starting.

Kerosene and Canada Thistles.—"P. L. C.," Bloomington Ill., asks if Canada Thistles can not be killed hy the nse of kerosene? He states that he has killed both Horseradish and Burdock by cutting off the top and applying kerosene, and while he has no Thistles upon which to try it, is sure that this will prove "a sure cure." Where there are but few plants of Canada Thistle, or other persistent weed, there is hut little difficulty in exterminating them. We have known a few plants of Canada Thistle to be killed by cutting them off, and placing a small handful of salt upon the cut surface. But when the plants have obtained the mastery, and are in large numbers, then the methods that serve for a few are impracticable. If the evil of weeds, like many other evils, could he taken in time—nipped in the bud, so to speak, farmers would have but little trouhle. One great difficulty is, the majority of people are not close observers; they do not notice the first approach of the enemy. It is only when trouhlesome weeds, small enough and easily managed in the beginning, get fully established, and make their presence known by the falling off of the proper crop, that the alarm is given. The first Canada Thistle, if it be taken at the right time, will yield to the thumb and finger; a few years later, the whole force of the farm may be unable to eradicate the increase.

Attention is called to the III. Cover page, giving simply a list of Premiums offered. Every one not already having a copy, should send for the Illustrated Descriptive List (32 pages), even if not desiring any Premium. Its engravings and descriptions of a great number and variety of articles will furnish useful and interesting information.

A free copy of the above will be sent post-paid to any one desiring it, or to any one's friends, wherever located. A Postal Card Order will be sufficient, simply saying : **"Send A. A. Premium List to———"** (*giving plainly the Name, Post Office, County and State.*)

No Mystery.

There is no mystery whatever about this Premium giving. The paper could not be supplied to any subscriber at lower rates if the premiums were not offered, as some have supposed. The scale of single and club subscription rates is fixed by the actual cost of supplying the paper itself, as explained last month (page 542).

The premiums are paid out of advertising receipts, which are increased by increased circulation secured by premiums. Indeed, the paper can be made all the better on account of the premiums.

The Reading pages are just as valuable to every one without regard to premiums or advertisements, and the *reading* pages are and SHALL be worth far more to every reader than the small subscription cost, which is only at the rate of 2 or 3 cents a week.

A Good Thing All Round.

As manufacturers know that we aim to supply *only* good, reliable articles as Premiums, and that placing an article in our list is an endorsement and gives it wide publicity, they are quite glad to supply the articles below cost (when given as premiums *only*) or, on the extraordinary terms which enable the publishers to offer them as they do.

Yet every article is just as valuable to the recipient as if he or the publishers paid its full regular price.

For the convenience of ALL our readers, arrangements are made to purchase premium articles at regular prices, and supply them to any friends desiring them.

A Double Benefit.

While this Premium Arrangement enables our readers to obtain valuable and desired premium articles **without cost**, by simply collecting a few or many names of their friends and neighbors (or at small cost if they take the subscriptions in clubs at club rates, and make up the difference), there is another good thing about it, thus: Of all the people in this country engaged in cultivating the soil, only about *one in forty* read any trustworthy, practical journal treating of their business. Yet every man who *reads* and *thinks* more about his work and his methods, will work better, plan better, profit more, and his mind, his thoughts, and his character will be elevated. And his family will be benefited.

So every one does a good work who succeeds in inducing another to become a *reader* of any good journal, whether he is himself stimulated to do this by the premium offers, or by his desire to benefit others, or by both motives.*

More than 40,000 Friends

have received valuable premiums from this Office, as tokens of their efforts to get their neighbors to reading. Some have received books or smaller articles for two, three or more subscribers sent in. Others have secured Hundreds of Dollars worth, and still others several Thousand Dollars worth of the Premiums. One at least received enough from the sale of articles obtained as Premium, to pay for a large farm, with stock and buildings.

We Invite Every Reader

To take some part in this enterprise, even though but a limited one. There are desirable premiums for sending only *one new* subscriber, or two or three new and old subscriptions. Other more expensive articles are worth the effort required to collect a larger list....And

It Can be Easily Done.

as proved by over **40,000** others. One subscription a day (or evening) will count up largely during the winter, and the premiums are open up to June. The subscriptions can come in as obtained, and the premium be taken *whenever* the desired list is made up. If the premium most desired is not in the end secured, others can be selected corresponding to the number of names sent up to any date.

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* NOTEWORTHY.—During 30 years past, the *American Agriculturist*, by its premiums and other pushing enterprises, has awakened the attention of people and led more persons to patronize and READ about Farm, Garden and Household work, than any other ten journals, if not more than all others combined. A multitude of people thus awakened are now the supporters of other local journals. Many new journals, some very good ones, have taken up the methods long ago originated by the *American Agriculturist*, to promote the spread of good reading.

Commercial Matters—Market Prices.

NEW YORK, DECEMBER 7, 1881.

Though in the aggregate of less magnitude than through the preceding months, business in Breadstuffs has been again on a very liberal scale, especially in Grain, the speculative dealings in which have been characterized by great activity, and by frequent and sometimes sharp changes in prices. The drift most of the month has been to lower figures, under a pressure to realize, but toward the close rallying again, leaving off irregularly. Export operations have been to a moderate extent, having been checked quite seriously by the speculative disturbances in values. Supplies in sight and at the seaboard have been diminishing, while the amount afloat and on passage for Western Europe has been on the increase. With inland navigation nearly ended for this season, receivers have been disposed to talk more hopefully of the outlook, but the stringency in money loans and discounts has been embarrassing to speculative holders, many of whom have been obliged to force their supplies on the market, thus contributing to the derangement and depression of prices, and the general injury of legitimate trade. Sympathizing closely with Grain, Provisions have been very variable, hog products leaving off heavily, on freer offerings, and only a moderately active movement, though, recently, shippers took important quantities, chiefly of Lard and Bacon—partly for France, whence came reports of a rescinding of the decree prohibiting importations of meats from America....Cotton has been worked up to higher figures, on a livelier business, mainly in the speculative interest....Wool has been quoted somewhat easier and irregular, on a tamer market....Hops have been in less request but have varied little in price....Tobacco attracted less attention, though favoring buyers....Ocean freights have been unsettled—leaving off for Grain weaker—including by steam for Liverpool at 3½*d* (6½cts.) per bushel, and for Provisions and most other classes of cargo steadier, including Provisions by steam for Liverpool at 12*s* 6*d*@15*s* ($3.00@$3.75) per ton.

The following suggestive tables show

Breadstuff Movements at New York during each of the last Two Months.—(The Sales largely speculative.)

	RECEIPTS.		SALES.	
	Past Month.	*Previous Month.*	*Past Month.*	*Previous Month.*
Flour, bbls......	460,900	448,000	419,000	387,000
Wheat, bushels,	3,165,000	3,189,000	57,823,000	57,305,000
Corn, "	4,439,000	2,736,000	36,951,000	42,460,000
Rye, "	355,000	175,000	229,000	202,000
Barley, "	1,210,000	343,000	438,000	337,000
Oats, "	735,000	605,000	7,476,000	9,568,000

Classification of Sales at New York in each of the last Two Months.—(The Sales largely speculative.)

	For Prompt Delivery.		*For Future Delivery —" Options."*	
	Past Month.	*Previous Month.*	*Past Month.*	*Previous Month.*
Wheat, bu....	5,194,000	5,585,000	52,629,000	51,720,000
Corn, bu......	5,565,000	4,894,000	31,951,000	37,566,000
Oats, bu.......	2,261,000	2,188,000	7,496,000	6,380,000

Exports of Breadstuffs from New York,

	Past Month.	*Previous Month.*
Flour, bbls....................	245,200	255,500
Wheat, bushels..............	2,386,600	2,559,000
Corn, "	2,341,000	2,668,500
Rye, "	179,000	78,000

The quantity of Wheat on passage for the United Kingdom and the Continent, to December 1, from all sources, was equal to 26,480,000 bushels ; and of Corn, equal to 3,040,000 bushels, against, at about the same time last year, 22,464,000 bushels Wheat, and 7,298,000 bushels Corn.

Stock of Grain in store at New York.

	Dec. 5, 1881.	*Nov. 1, 1881.*	*Dec. 6, 1880*
Wheat, bushels....	5,616,536	6,241,935	5,670,742
Corn "	6,065,338	5,796,411	2,508,081
Rye "	102,083	60,611	166,654
Barley "	66,963	52,057	163,592
Oats "	1,069,103	1,796,060	809,982

The visible supplies of Wheat—embracing hoards at lake ports, in transit, and on the seaboard—at latest dates, embraced about 19,816,300 bushels ; of Corn, 20,634,000 bushels ; of Rye, 1,399,000 bushels ; of Barley, 3,339,000 bushels, and of Oats, 2,912,200 bushels, against at the same time a year ago, an aggregate of 24,622,500 bushels Wheat, 16,683,750 bushels Corn, 871,650 bushels Rye, 2,449,400 bushels Barley, and 3,657,300 bushels Oats.

CURRENT WHOLESALE PRICES.

	Nov. 7, 1881.	Dec. 7, 1881.
FLOUR—Super. State & West	$4 00 @ 5 25	$4 25 @ 5 25
" Low Shipping Extra....	5 15 @ 5 75	5 00 @ 5 60
" Extra Southern.........	5 75 @ 8 50	5 75 @ 8 25
" Extra Western..........	5 10 @ 9 00	5 10 @ 8 75
" " Minnesota.......	5 35 @ 9 00	5 15 @ 8 75
RYE FLOUR, Superfine.......	5 00 @ 5 50	4 80 @ 5 30
CORN-MEAL, ₩ bbl............	3 10 @ 3 90	3 15 @ 3 85
WHEAT—All kinds of White.	1 25 @ 1 42½	1 27½@ 1 42½
" Red and Amber.......	1 00 @ 1 45	1 25 @ 1 46½
" Spring.................	1 05 @ 1 41	1 10 @ 1 46
CORN—Yellow................	— @ 73	70 @ 72½
" White.................	— @ 74	71 @ 73¼
" Mixed.................	65 @ 70	66 @ 72¼
OATS...........................	47 @ 55	49 @ 56
RYE............................	1 01 @ 1 05	97 @ 1 01
BARLEY........................	85 @ 1 17½	83 @ 1 15
PORK—Mess, old, ₩ bbl......	17 50 @ —	17 55 @17 50
" " new, "	— @ —	18 25 @18 50
LARD, Wes'n steam, p. 100 lbs	11 40 @ —	11 30 @11 35
TALLOW, ₩ 100 lbs............	7 87½@ 8 00	7 25 @ 7 37½
STEARINE, ₩ 100 lbs..........	11 50 @11 75	— @11 75
HOGS, dressed, ₩ lb...........	8 @ 8⅜	7⅜@ 7¾
COTTON, Middlings, ₩ lb......	11⅝@ 11⅞	12⅛@ 12½

Osiers—Willows.—"F. H. W." There seems to be a common impression that there is but one basket Willow, and that the Osier. In fact, the very poorest Willow, and fit only for the coarsest farm and other heavy baskets, is the Osier. The finer basket Willows, such as are used for small work, have both in England and on the continent local names, there being a dozen or more distinct kinds. There is but little inducement at present for any one to undertake Willow culture if the product is to be sold, as the business is mainly controlled by a few importers, who will not buy the American product. The only way in which the Willows can be disposed of is through the general produce merchants, who sell them when they get a chance customer, but there is no regular trade, save in imported stock. The Colt Establishment, near Hartford, works up its own Willows, and finds no difficulty in making the most beautiful articles from a stock of American growth.

Salt on Wheat.—"L. H.," and several others. While on some soils salt produces no apparent results, on others it is of marked benefit. Its utility can only be learned by experiment. It often has an indirect action, in enabling the plant to take up Silica and strengthen the straw. Its effect in preventing the growth of those minute fungi which cause rust and smut, is sometimes beneficial. After cold weather has put a stop to the growth of the plants, salt sown at the rate of five or six bushels to the acre, often increases the health of the plant and improves the appearance of the grain.

Assays of Minerals.—Those who send us specimens of minerals should recollect, that while some minerals may be determined with fair accuracy by a mere inspection, others require chemical examination, for which we have not a laboratory or the time, and unless provision is made for an assayer's fee, we can make no report.

Reports of Horticultural Societies.—In filing away the Reports that have been sent us from time to time during the past year, we are reminded in the first place to make a general acknowledgment to those secretaries who have not had a special one. We observe that the Reports, as a rule, are less bulky than in former years, while they are correspondingly more valuable. It may gratify Mr. Smith to read that he exhibited 23 varieties of the common apples, with the list of their names, or Miss Jones, that she had the same thirteen chrysanthemums, the list of which is published this year, as it has been every one of the past dozen years. These matters make work for the printers, and increase the bulk of the Reports, but they do not add to their value. The Sixth Report of the Montreal Horticultural Society is a model in its way. Its mechanical execution is excellent, and its papers of commendable brevity, and all the more valuable for being on local matters. The same may be said of the Proceedings of the 26th Annual Meeting of the Western New York Horticultural Society. This is one of the "meatiest" Reports that come to us and always contains useful matter. The Ohio and the New Jersey State Horticultural Societies both have our thanks for their valuable Reports.

Preserving Eggs.—Numerous correspondents have asked if there is not some method of preserving eggs for an indefinite length of time, so that they can not be told from fresh eggs, without the use of lime. So far as we are aware, there is no method practicable, on a commercial scale, other than the use of lime-wash. For home-use, several plans have been tried with more or less success. To preserve eggs, the pores of the shell must be stopped up, for two reasons: to prevent the entrance of the air, and consequent spoiling of the contents; and to prevent the evaporation of the moisture of the egg and a drying up of the contents. Placing the eggs in a net or basket, and plunging them for a few seconds in boiling water, long enough to cook or solidify a thin film of the white next to the shell, is successfully practised in some families, but it would spoil the eggs for sale. Closing the pores by smearing the shell with lard, suet, or linseed oil, has been tried with more or less success. Many years ago a patent was taken out for the use of shellac varnish for the same purpose. The care required in the use of the varnish, as each egg must be treated separately, and as a slight uncovered space would allow the egg to spoil, besides the discoloration, prevented this from coming into use. If any one can suggest any method better for commercial purposes than the lime-wash, we should be glad to have it.

Japan and Japanning.—Several inquirers. These terms are used with very different meanings. What is known as Japan, or Japan Drier, and used to mix with paint, is made with Linseed Oil, Litharge, Umber, and sometimes other ingredients. It cannot be readily made on a small scale, and it is better to buy it. The process called Japanning, as applied to wood, pasteboard, etc., consists in the use of a varnish made of Asphaltum, Anime, or other gums, with oil, the work being afterwards exposed in an oven to a heat of about 300°, to make the varnish flow, and give a beautiful smooth surface. The Japanning of common articles of tinware, which gives a rich brown color, is done by applying a varnish made by dissolving Asphaltum in turpentine, and adding a little linseed oil to toughen it.

Success in Artificial Incubation.—"W. H. L.," New Orleans, La., writes; "Last March I placed in my incubator 180 eggs bought on the market at 20 cents per dozen. At the end of the eighth day of incubation, examined them, took 30 unfertile out of the lot, leaving 150 containing chicks, as far as could be seen; I lost a number by a stroke of lightning, which fell next door, and others died at different stages. Out of the lot I hatched 120 healthy chickens, and I raised out of these 110, which attained maturity. I raised them artificially, that is without a mother, the heat being furnished by the lamp of the incubator. As for showing them how to eat, scratch, etc., I had no trouble, as I had several young chicks hatched by a hen, which I put in among them at night, since which time they have taken care of themselves."—This is an encouraging report for those who contemplate raising chicks artificially. When we take into account the fact that the eggs were bought in the market, and had no special care in handling, the proportion that hatched is remarkable. A former associate some years ago made the statement that he had just as good success with barrelled eggs sent from the West, with all the rough handling they must receive, as he did with eggs carefully packed by those who advertise "eggs for hatching."

Earwigs.—"W. B.," Bergen Co., N. J.—The insect so troublesome to European gardeners, called Earwig in England, is not known in this country. It is a nocturnal insect, nearly related to the Cockroach. It is said to be called Earwig, because it hides itself in any hole or crevice, and has been known to take refuge in the human ear. Others say the name is properly Earwing, in reference to the shape of its short wings. What is often called Earwig in this country is not a true insect, but one of the Myriapods, related to the tropical Centipede.

Osiers—Willows.—"J. D.," Shepherdsville, Ky. The common Osier is only suited for very coarse work, such as farm baskets, etc. For the finer wicker work, various kinds of willows are used, and most of the large nurseries can supply them. We cannot give you prices.

Pruning the Norway Spruce.—N. A. Briggs, Merrimack Co., N. H., asks the proper season for pruning the Norway Spruce, and like several others who have made the inquiry, omits to say what is his object in pruning. Pruning may be done for very opposite ends. If the Spruce is planted as a hedge or screen, then it needs to be dwarfed, rather than encouraged to grow upward. Cutting back the new growth, before it has yet hardened, is generally done in June: this has the effect to keep the tree in a dwarf, compact form. If the object is merely to regulate the shape, by removing or shortening certain branches, it may be done in autumn at any time before severe weather comes. For cutting away the lower limbs of a Norway Spruce, or other evergreen, there is no one "proper time."

Pruning the Peach Tree.—"D. W. C.," Syracuse, N. Y. By cutting back from one-third to one half of the previous season's growth on a young tree, and at the same time removing altogether any crowded branches, a more compact head is formed. Besides, the tree is less likely to break down from the weight of fruit, which is more evenly distributed. This cutting should be done very early in spring. We recently saw in Massachusetts some trees that had been thus treated; all were compact and shapely, and the foliage was remarkably vigorous and healthy, while those that were in bearing had the fruit evenly distributed. Especially in garden culture is this treatment advisable.

Mealy Bugs.—"H. T. W." When these first make their appearance upon window or greenhouse plants, commence the attack. It is not difficult to keep them under if taken in hand at their first appearance. Keep a small bottle of strong alcohol or benzine, with a camel's-hair pencil fixed to the cork, and when a mealy bug is seen, give it the least touch of the liquid. We have of late years used nothing, applied (so to speak) with a pointed stick. Whittle a piece of soft pine down to a very sharp point, keeping several such sticks in handy places about the greenhouse. Whenever a mealy bug is seen, impale it on a pointed stick and remove it. It is very easy if you begin early and keep the mastery.

Sending Poultry to Market.—Messrs. E. & O. Ward, the veteran commission dealers, have learned that an impression can be made on some people only by hammering away. None better than they know the immense aggregate loss to senders of poultry to market, through the neglect of a few simple points, which are easier to observe than to omit. In their large general circular they give directions for preparing poultry for market; in autumn they send out a Special Poultry Circular, and towards the Holidays they publish a condensed form, in which they say:—"To insure highest market prices, poultry must be well fattened; crops empty when killed; kill by bleeding, but do not remove the head; have them nicely and well picked, the skin not broken or torn; the entrails should not be removed; thoroughly cooled but not frozen. Pack in boxes, with a layer of clean straw (Rye straw the best) between each layer of poultry, in the same posture in which they roost. Mark each box, specifying what it contains. Send invoice by mail. Ship to reach us about the middle of the week—should never reach us so late in the week as on Saturday. Turkeys weighing over 11 or 12 lbs. are in very little demand after New Year's Day. If you cannot find any profit in sending prime quality and well prepared, you need not look for any in ordinary or poor qualities. *We repeat again and again—see to it that every package is marked with your name or initials, and also what it contains, and send invoice.*" The Messrs. Ward suggest that by adhering to the above, on one consignment shippers of poultry will save more than a year's subscription to the *American Agriculturist* will cost them.

A Correction.—In Professor Caldwell's tables under "Food Rations for Milk," Dec. 1881, page 517, there is an omission of a single period, which has brought confusion to some of our readers. After Cottou-seed meal, instead of "25 lbs.," read 2.5 lbs. This is an easy mistake to make, and one that might lead to great error.

Experience with Barbed Wire Fence.—"A. H. G.," Grand Rapids, Mich., is of opinion that the different reports as to the value of barbed wire fencing are due to the manner in which it is put up. His first attempt was with barbed wire alone. A dog drove his herd of 11 cows at and through the fence, one cow being so injured in the udder that she was turned into beef. After this accident he nailed one board at the top; the animals now see it, and he regards this as the best fence on his farm. On another farm he keeps a number of colts, which had the habit of breaking down and going through the board fence. He set posts about 20 feet apart, and placed a single wire upon these at about 10 inches above the boards. His neighbors predicted that the colts would injure or kill themselves with this barbed wire, but though some of the colts are very mischievous, none have been over or through the fence, or have even been scratched. Mr. G. finds great satisfaction in getting the better of an unruly horse.

Feed Mill Prizes.—J. A. Field & Co., makers of the well known Big Giant Feed Mills, offer four of their mills as premiums; two for the first and second best results in cattle feeding, and two for the same in hog feeding. The conditions for competitors can be had by sending to Messrs. J. A. Field & Co., St. Louis, Mo.

Soldering Copper or Brass.—"H. W." The liquid used by tinsmiths and other workmen to cause soft solder to adhere to copper, brass, and even to iron, about which some maintain a secrecy, is merely a crude chloride of zinc. To make it, put a little muriatic acid into a wide-mouthed bottle of twice the capacity. Set this out of doors, on account of the odor, and add zinc cut in strips, so long as any is dissolved. In soldering copper, brass, or iron, scrape the spot bright, place upon it a drop or two of this liquid and apply solder in the usual manner.

A Freight Car-Load.—The ordinary freight cars used on the different railroads, can each carry: 400 to 450 bushels of wheat; 500 bushels of Indian corn; 400 to 500 bushels of Potatoes; 800 to 900 bushels of oats; 125 barrels of flour. This is 12 to 14 tons (of 2,000 lbs.) weight the car load.

Statistician at the Department of Agriculture.—Col. J. R. Dodge, who found that the Department was not large enough to contain both himself and LeDuc, and departed for a while, has been restored to his old position by Commissioner Loring. An excellent thing for the Department, and for the country.

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PIANO,
THE VICTOR in all great contests, and for THE PAST FIFTY-SEVEN YEARS the ACKNOWLEDGED STANDARD of the WORLD—being copied not only by the makers of this country, but of Europe—*will be offered during the present conditions of trade at*
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10 FULL SETS Golden Tongue REEDS. See "Plan of Reedboard"

It is with pleasure that I offer the most perfect musical combination and wonderful musical instrument ever made.

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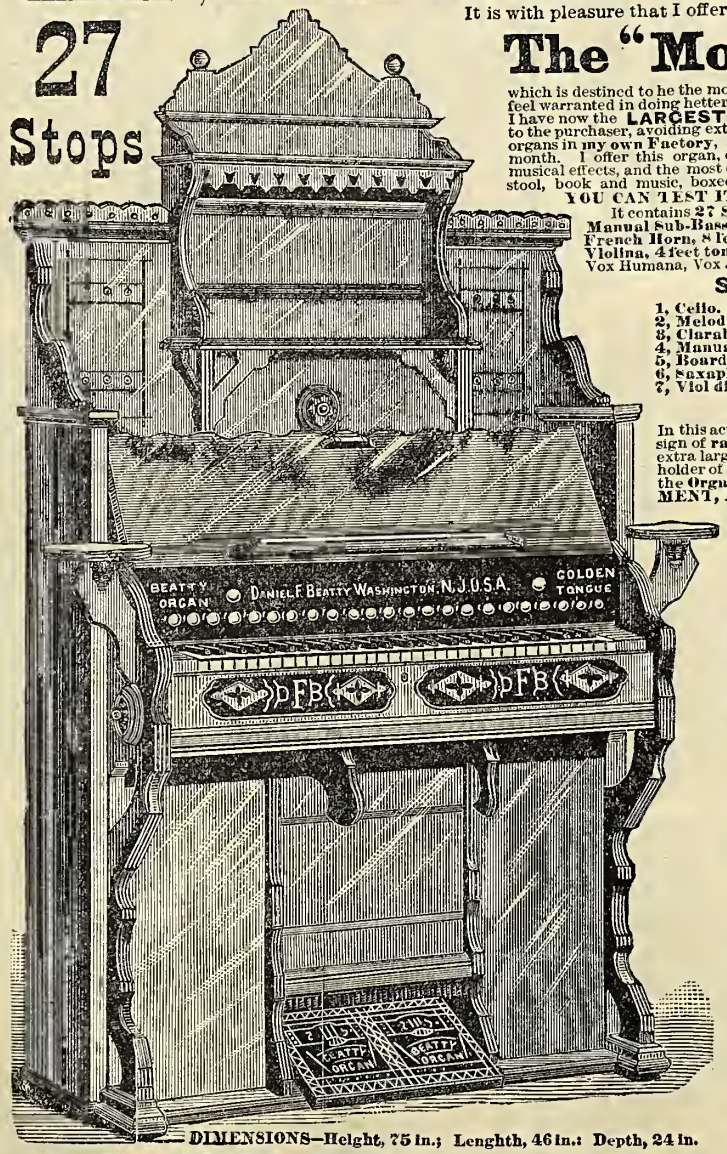

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which is destined to be the most **Popular Organ** the world has ever seen. My success in the past having been so unprecedented, I feel warranted in doing better than ever before for my customers, hence this unparallelled offer. I have now the **LARGEST FACTORY IN THE WORLD** that ships its products direct to the purchaser, avoiding extortionate profits, middlemen and agents, manufacturing my own organs in **my own Factory**, and being sure of selling thousands of this charming style every month. I offer this organ, combining a **grander variety** of stop work, **greater power**, more musical effects, and the most elegant exterior, including a first-class stool, book and music, boxed and delivered on board cars here

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YOU CAN TEST IT IN YOUR OWN HOME, free of expense, FOR ONE YEAR.

It contains **27 Stops, 5 Octaves**, 10 full sets Golden Tongue Reeds, as follows:

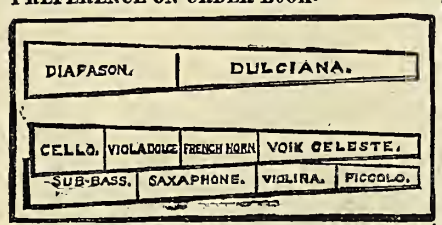
Manual Sub-Bass, 16 feet tone. **Diapason, 8 feet tone.** **Dulciana, 8 feet tone.** **Cello, 8 feet tone.**
French Horn, 8 feet tone. **Saxaphone, 8 feet tone.** **Voix Celeste, 8 feet tone.** **Viola Dolce, 4 feet tone.**
Violina, 4 feet tone. **Piccolo, 4 feet tone.** also Coupler Harmonique, Harp Æoline, Grand Expressione, Vox Humana, Vox Jubilante and other grand accessory effects, as below:—

SPECIFICATION OF STOP WORK, 27 IN ALL.

1, Cello.
2, Melodia.
3, Clarabella.
4, Manual Sub-Bass.
5, Boardon.
6, Saxaphone.
7, Viol di Gamba.
8, Diapason.
9, Viola Dolce.
10, Grand Expressione.
11, French Horn.
12, Harp Æoline.
13, Vox Humana.
14, Echo.
15, Dulciana.
16, Clarionet.
17, Voix Celeste.
18, Violina.
19, Vox Jubilante.
20, Piccolo.
21, Coupler Harmonique.
22, Orchestral Forte.
23, Grand Organ Knee Stop.
24, Right Knee Stop.
25, Automatic Valve Stop.
26, Right Duplex Damper.
27, Left Duplex Damper.

BEATTY'S NEW PATENT ADJUSTABLE STOP ACTION.

In this action is reached the highest state of perfection attainable. The case of the **"MOZART"** Organ is a design of **rare beauty** and is unrivalled at the price offered. Beautiful Lamp stands. It is of **solid walnut** with extra large fancy top, decorated with original designs in fret work. Receptable for music, book rack, music holder of chaste design, sliding fall with lock. **This beautiful Organ was never equalled in the history of the Organ Trade for excellence in every feature.** ☞**ORDER DIRECT FROM THIS ADVERTISEMENT, AS I POSITIVELY WILL NOT DEVIATE FROM PRICE, $60.00. CASH ORDERS TAKE PREFERENCE ON ORDER BOOK.**



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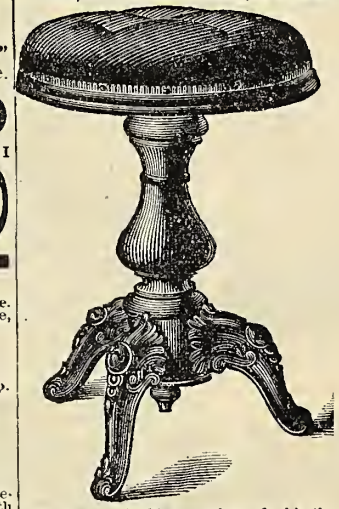

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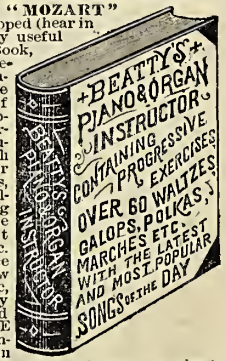

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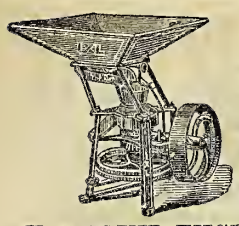

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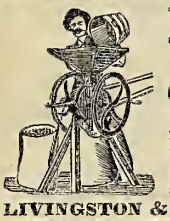

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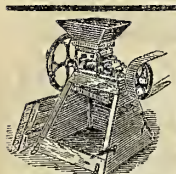

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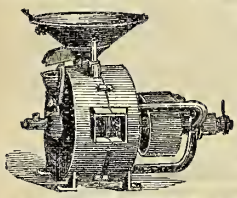

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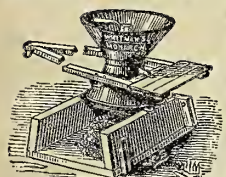

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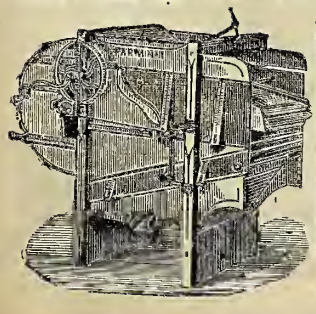

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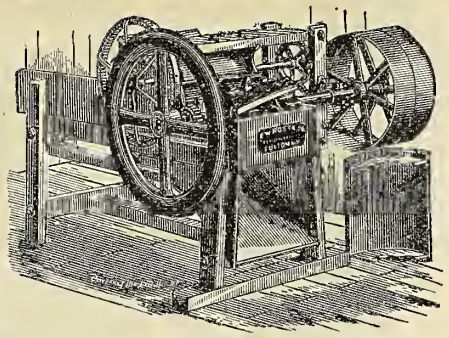

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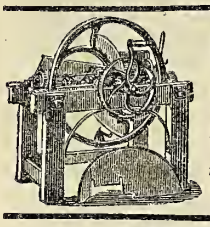

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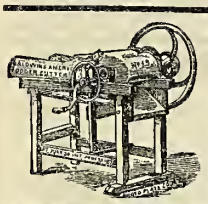

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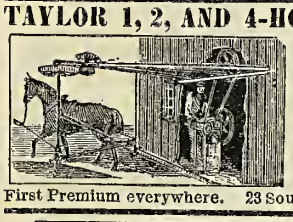

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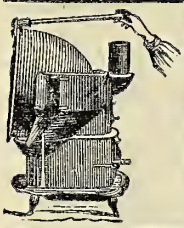

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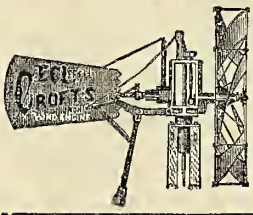

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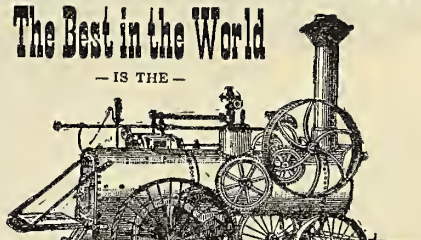

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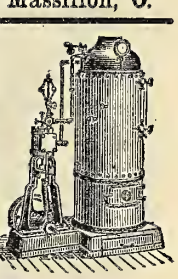

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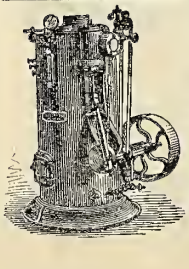

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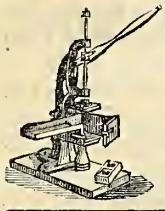

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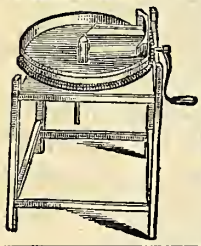

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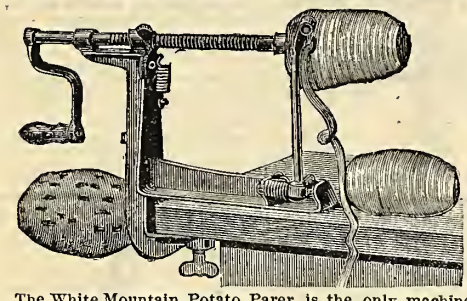

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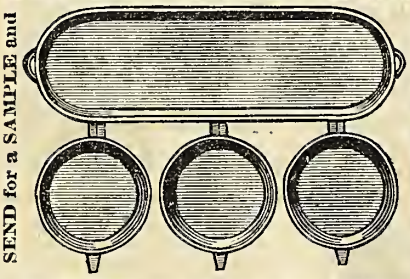

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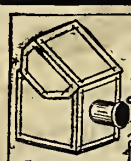

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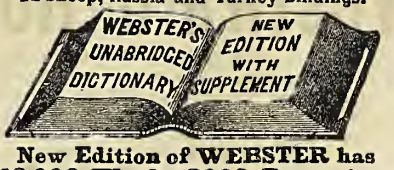

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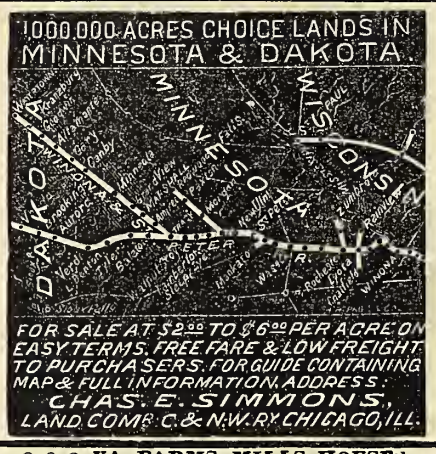

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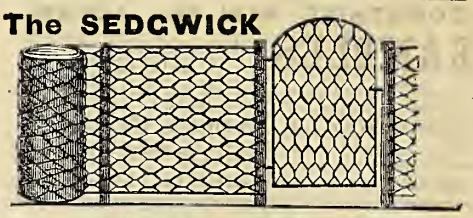

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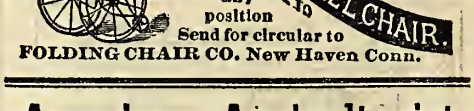

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231	Firefly Hand Hoe and Garden Plow	3.50	5	
232	Matthews' Garden Seed Drill	13.00	15	
233	The Gale Horse Hay-Rake	25.00	30	
234	Hege's Improved Saw Mill, complete	300.00	300	
235	The Common Sense Feed Cutter	35.00	40	
236	Bookwalter Steam Engine	240.00	210	
237	Cahoon's Broadcast Seed Sower	6.00	8	
238	1 Gallon of Sheep Dip	2.00	4	
239	Men's Tool Chest (60 good tools)	16.50	22	
240	Boy's Tool Chest (19 articles)	2.00	3	
241	Boy's Tool Chest (26 articles)	3.00	4	
242	Improved Bracket Saw Outfit	1.10	2	*
243	Buckeye Jr. Lawn Mower	14.00	17	
244	Gale Chilled Plow	17.00	20	
245	Rubber Hose, extra ¾ inch (50 feet)	16.00	17	
246	The I X L Tug Link	1.50	2	
247	Lewis' Combination Force Pump	5.00	7	
248	Improved Universal Force Pump	20.50	23	
249	Whitman's Fountain Pump, Rubber Hose	8.50	14	
250	Floral Atomizer, for sprinkling flowers.	1.35	2	
251	Imperial Egg Food (6 lbs.)	2.00	3	
252	Multum in Parvo Pocket Knife, valuable,	4.00	5	*
253	Sportsman's Knife, screw-driver, etc	3.25	4	*
254	Pocket-Knife with scissors, pearl handle,	1.75	3	*
255	Pocket-Knife, 4 blades	1.00	2	
256	Pocket-Knife, 4 blades, extra quality	1.50	3	*
257	Pocket-Knife, 4 blades, pearl handle	2.00	3	*
258	Pocket-Knife, pearl handle, 5 blades	2.75	4	*
259	Pocket-Knife, pearl handle, 4 blades	2.00	3	*
260	Pocket-Knife, 4 blades, ivory handle	1.00	2	*
261	Pocket-Knife, 4 blades, larger size	1.25	2	*
262	Pocket-Knife, 4 blades, pearl or tortoise,	1.50	3	*
263	Pocket-Knife, 4 blades, pearl or tortoise,	1.75	3	*
264	Pocket-Knife, 4 blades, pearl or tortoise,	2.00	3	*
265	French Cook's Knife, Fork, and Steel	4.50	6	
266	Bread Knife, carved handle	1.00	2	*
267	Pair Carvers; good steel; stag handles	2.25	4	
268	Knives and Forks; best steel; rubber h.	4.00	5	*
269	Butcher's Knife and Steel	1.35	2	*
270	Pruning Knife, extra quality	1.25	2	*
271	Budding Knife; best steel; ivory handle.	1.10	2	*
272	Shaving Set, complete; 2 Razors, etc	5.75	7	*
274	Pair Shears, steel, 8 inches long	1.00	2	*
275	Pair of Scissors with Silver Thimble	1.50	2	*
276	Novelty Pocket Scissors	1.00	2	*
277	Button Hole Scissors	.75	1	*
278	"Trichine Tester" and Microscope, new,	3.00	4	*
279	Meas'g Jar, Egg Beater, Lemon Squ'zer,	1.50	2	
283	12 Gent's Handkerchiefs, Linen, Hem'ed,	4.20	7	*
285	Florence Hair Brush and Comb	2.00	3	*
286	Florence Hand Mirror	2.00	3	*
289	Silk Handkerchief, colored	1.00	2	*
290	Silk Handkerchief, colored	1.25	3	*
291	12 Table Napkins, 23 by 24, Damask	4.80	9	*
292	12 Lady's Handkerchiefs; linen	4.80	8	*
293	12 Lady's Handkerchiefs, colored borders	6.00	9	*
294	12 Towels, colored border, 21 by 23	4.80	9	*
295	Perfume Case, Pearl, Perfume bottle	3.00	4	*
297	Japanese Cabinet, inlaid front	2.00	3	
298	One pair Japanese Vases, ornamented	.75	1	*
299	Japanese Letter Case, ornamented	1.50	2	*
300	Japanese Match Box, ornamented	1.00	2	*
301	Japanese Card Receiver, ornamented	1.00	2	*
303	Brooch and Earrings, Amber	4.00	5	*
306	One pair Celluloid Bracelets	.60	1	*
307	One pair Celluloid Bracelets	1.00	2	*
314	Shawl Strap, Walnut Handle	.70	1	*
315	Feather Fan, finely ornamented	1.50	2	*
316	Feather Fan, finely ornamented	2.25	3	*
319	One pair Bouquet Holders (glass)	1.50	2	*
320	Ladies' Work Box, Ebony inlaid	1.50	2	
321	Handkerchief Box, Japanese	2.00	3	*
322	Glove Box, Japanese	1.25	2	*
323	Lady's Pocket Book, (American Russia).	1.00	2	*
324	Poeket Book	.75	1	*
325	Pocket Book	1.00	2	*
326	Poeket Book	1.50	3	*
327	Lady's Pocket Book	2.00	4	*
328	Card Case, Pearl	2.50	4	*
329	Ring Case, Pearl	1.25	2	*
330	Jewel Box, Japanese	1.50	2	*
331	Jewel Case, Pearl	1.75	3	*
332	Lady's Hand Leather Satchel, 4½ by 5	2.00	4	*
333	Lady's Hand Leather Satchel, 5 by 6½	2.00	4	*
335	Lady's Leather Hand Bag, 6½ by 6¾	2.00	4	*
336	Lady's Seal-skin Hand Bag, 6 by 6	2.00	3	*
337	Thimble Case, Shell	1.50	2	*
339	Photographic Album	2.00	3	*
340	Autograph Album	1.00	2	*
341	Autograph Album	1.60	3	*
342	Cabinet Photographic Frame, Silk Velvet	1.75	3	*
344	Gentleman's Side Wallet, Leather	2.00	4	*
345	Box Clark's best Spool Cotton (8 spools)	.80	2	*
346	Crochet Hook, Button Hook, etc	.75	1	*
347	Student's Companion (convenient sund's)	1.00	2	*
348	Novelty Pocket Scales; weighs to 15 lbs.	.60	1	*
349	Smoking Set; dark wood ornaments	.75	1	*
350	Writing Desk, Japanese Lacquered	3.50	5	
351	Work Box, Jap. Lacquered, Pearl, inlaid	3.50	5	
352	Briggs' Marking Ink and Pen	.75	1	*
354	Silent Teacher, Sectional U. S. Map, wood	1.00	2	*
355	Indian Clubs, selected maple	1.50	2	
356	Spring Bagatelle; children's game	1.50	2	
357	Scholar's Companion, many sundries	.75	1	*
358	Ornamented Combined Lunch Box, Cup.	.75	1	*
359	Graphoscope (for viewing large Photo's)	8.00	11	
360	Swing for Children, very good	1.50	2	
361	Boy's Yacht (16 inches), Sails, etc	2.00	3	
362	Combination Doll-House	1.75	3	*
363	Patient Angler—a Game, etc	.90	2	*
364	Great Suspension Bridge, Toy Model	1.75	3	*
365	Natural History Jingles (for Children)	.60	1	*
366	Gaskell's Compendium, Teaching Pen'p	1.00	2	*
367	Crandall's Noah's Dominoes (fine game).	1.00	2	*
368	The "Æolia" Piano (Toy Piano)	1.00	2	
369	Whistling Locomotive (Toy)	1.00	2	*
370	Crandall's Donkey and Rider	.70	1	*
371	Crandall's Jolly Blacks	.70	1	*
372	Crandall's Acrobats (best Toy made)	.65	1	*
373	Crandall's No. 3 Building Blocks	.90	2	*
374	Crandall's Heavy Artillery	3.00	5	*
375	Crandall's Treasure Box	1.00	2	
376	Pen Holder, Book Clamp, Transpa't Slate	.75	1	*
377	Girl's Polished Metal Tea Set	1.50	2	*
378	Steel Magnet (5-inch)	.60	1	*
379	Vignette Authors	.60	1	*
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402	Crandall's District School	1.20	2	*
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405	Remington Double Barrel Breech-Loader	30.00	30	
406	Remington Single Barrel Breech-Loader	14.00	16	
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408	Dog-Call or Whistle (metal)	.50	1	*
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410	The Whitman Saddle	12.00	14	
411	Whitman's Halter Bridle	5.00	7	*
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414	Fishing Tackle Assortment, Lot 1 / Fishing Tackle Assortment, Lot 2	1.00 / 2.00	2 / 3	* / *
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421	Shot and Powder Measure	.50	1	*
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424	Double-Edged Hunting Knife	3.00	4	*
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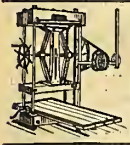

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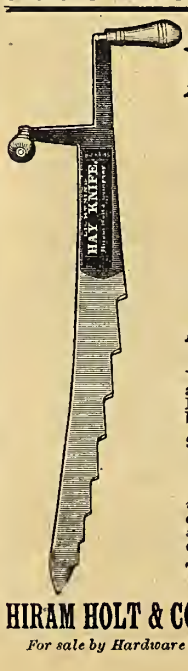

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Vol. XLI. **Number 2.**

PUBLISHED BY THE
ORANGE JUDD COMPANY,
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NEW-YORK.

The MAPES COMPLETE MANURES

For Early Potatoes, Cabbages, Cucumbers, and Early Truck of all kinds.

RESULTS ON POTATOES, VEGETABLES, ORANGES, ETC., DURING PAST UNFAVORABLE SEASON, 1881.

Lewis Beach, New Castle, Westchester Co., N. Y., reports, Nov. 1, 1881: My experiments this season with Mapes Complete Manure have been, as usual, very satisfactory. Although the season has been extremely dry since the middle of July, my crop of Potatoes was excellent, while those of my neighbors, in some cases, were hardly worth digging. I planted the White Rose variety in hills 2½ feet each way, 2 eyes to the hill, using about 3 bags Complete Manure per acre, with results as follows:

Mapes Complete Manure yielded per Acre	344 bushels.
Natural Soil, good	191 "
Increase per Acre	153 "
At the time of digging they were worth $1.00 per bushel, making the increase	$153.00.
Cost of Mapes Manure per acre	$17.40
Extra Labor with same	3.00
	$20.40

Net profit per Acre from Mapes Manures, $132.60.

A portion of the field was manured with barn-yard manure, fair dressing, and where Mapes Complete Manure was added the yield was, per acre	379 bushels.
Barn-yard manure alone yielded	235 "
Increase with Mapes Complete Manure	144 "
Valued as above	$144.00
Expenses as above	20.40
	$123.60
Leaving a net profit from use of Mapes Complete Manure of $123.60 per acre. In the above experiments, Mapes Complete Manure yielded	344 bushels.
Barn-yard manure alone	235 "
Leaving a balance in favor of Mapes Manure	109 "

C. S. Grant, Bayville, Ocean Co., N. J., reports, Dec., 1881: I used the Mapes Manures alone this year for Potatoes, Cabbages, Beets, and general truck, and had the best yield I ever had, notwithstanding the dry season. Shall use them next year. My neighbors, who used stable manure, besides other patent fertilizers, had their vegetables, melons, etc., burned up by the dry weather. I was the only one in the neighborhood who had any vegetable crops worth naming.

S. P. Keator, Rosendale, Ulster Co., N. Y., reports, Dec. 6th, 1881: Soil, sandy loam; season unfavorable; 3 bags per acre of MAPES POTATO MANURE in the hill slightly covered with soil. Yield, 200 bushels per acre; quality good. I used the Mapes Potato Manure on a sandy soil the past season, and must say that I raised the finest potatoes of the Early Rose variety that I ever raised. They were free from worms, and the soil was light and sandy, still they yielded 200 bushels per acre, with no other manure.

R. E. Pinney Suffield, Hartford Co., Conn., reports, Nov. 2, 1881: I have never been able before this season to raise potatoes on my farm, although I have tried many brands of fertilizers and stable manure also. This crop, grown with THE MAPES POTATO MANURE, is the best crop of potatoes I have ever raised.

Some Premium Crops, season 1881, at Queens County Agricultural Society Summer Fair, at Mineola, Long Island, grown with the Mapes Complete Manures.

Lettuce and Spinach	grown by John Breen.	Asparagus, 1st Premium	grown by Valentine Frost.
Early Potatoes	" H. Weeks.	" 2d "	" G. H. Townsend.
Early Peas	" T. Baylis.		

These last awards make seven Premium Crops of Asparagus grown with the Mapes Manure since 1878, exhibited at Queens County Agricultural Fairs, at Mineola, the section where there are so many of the well-known "Oyster Bay Asparagus" growers. The First Premium Crops of Cauliflowers, Cabbage, Savoy, Early Potatoes, and Seed Potatoes, at the same Fair, 1880, were grown with the Mapes Manures.

Orange Groves in Florida.—Dr. G. W. Lancaster, of De Land, Volusia Co., Florida, writes, October 27th, 1881, "I have used your 'ORANGE-TREE MANURE' on my groves the past year with the very best results. It surpasses all other orange-tree fertilizers I know of. It not only causes a vigorous, healthy growth, but it effectually cleans out all varieties of the scale insects, peculiar to the orange trees of Florida, probably because of its power of promoting health and vigor to the tree. Many tons will be needed in this locality next year." The "Orange-tree Manure" is the preparation we recommend also for all nursery young stock, and small and large fruit-trees; also strawberries, grapes, raspberries, currants, etc., when vigorous growth is required without detriment to fruiting qualities.

THE MAPES MANURES are the CHEAPEST in the market, according to valuations by the NEW JERSEY AGRICULTURAL STATION, Prof. Geo. H. Cook, Director, New Brunswick, N. J.

From a circular just published by the New Jersey Agricultural Station we gather the following information, which may be of value to farmers. Of the brands of fertilizers best known in this community, the selling price per ton exceeds the estimated value in the following cases, the figures being the *excess of price* over estimated value per ton: Allentown Bone, $18.54; Commonwealth Bone Meal, $17.57; Smith's Bone Phosphate, $5.64; Stockbridge's Grain Manure, $3.33; Stockbridge's Potato Manure, $15.76; Star Bone Phosphate, $0.33; Star Guano, $13.51; Soluble Pacific Guano, $8.67. Two brands are estimated to be worth MORE per ton than the selling price, as follows: Mapes's A Brand, $1.94; Mapes's Corn Manure, $2.07.—*Hightstown (N. J.) Gazette, Aug.* 18, 1881.

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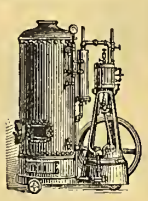

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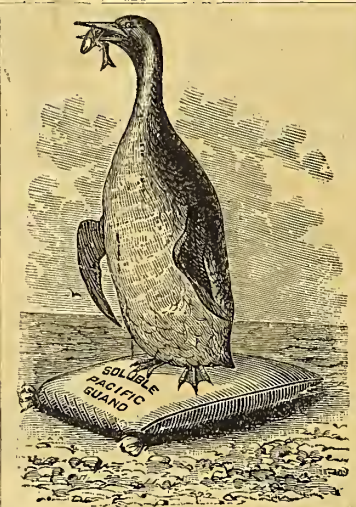

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AMERICAN AGRICULTURIST

For the Farm, Garden, and Household.

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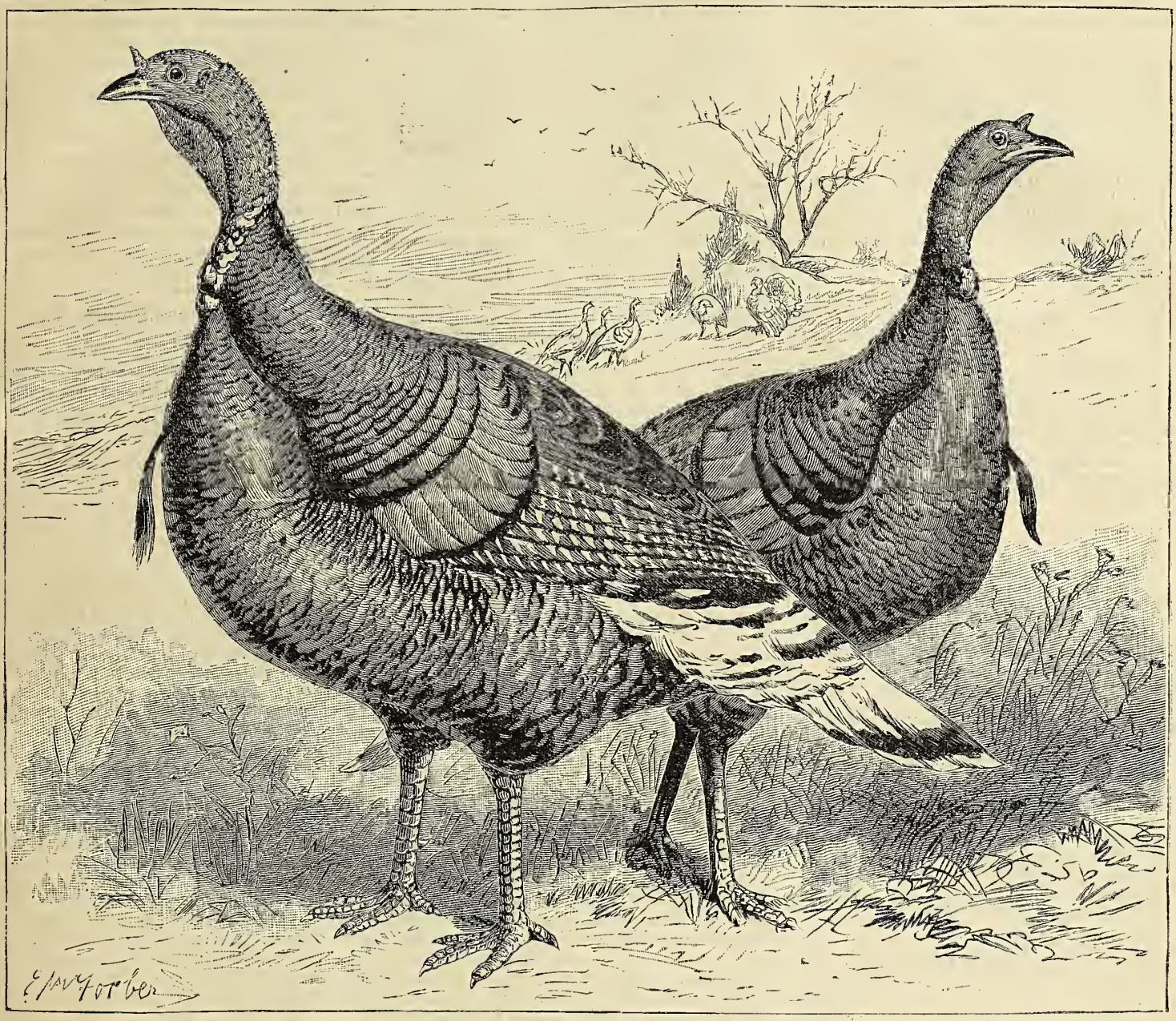
VOLUME XLI.—No. 2. NEW YORK, FEBRUARY, 1882. NEW SERIES—No. 421.



A PAIR OF BRONZE TURKEYS.—FROM THE FLOCK OF WM. CLIFT, MYSTIC BRIDGE, CT.—*Drawn and Engraved for the American Agriculturist.*

The Bronze Turkey is the most beautiful and desirable of the breeds of turkeys now competing for popular favor in our country. We do not claim for it that it is larger than occasional specimens of the wild bird, or of the other breeds, black, white, buff, slate, or the "Narragansetts." The size of the turkey depends not only upon the stock bred from, and the regular feeding, but upon age, which gives the wild birds a great advantage. Nine-tenths at least of all our domesticated turkeys are slaughtered before they are ten months old, and very few see the close of their second year. The wild bird does not attain its full size until the fourth or fifth year. Rarely, the hunters bring in old cocks weighing from forty to fifty pounds, and the incident generally finds its way into the papers as an unusual occurrence. Two and three-year-old cocks of the Bronze breed are frequently reported as weighing 40 to 45 pounds, and the extreme weights of older birds are about 50 pounds. Heavy weights, we are inclined to think, depend quite as much upon regular good feeding as upon stock. The full feed of birds, reserved for breeding, is generally slackened as the laying season approaches, to prevent their too early laying, in the Northern States. There is much difference in the stock of Bronze turkeys, depending largely upon the skill of breeders. Some are careless of the reputation of their flocks, do not change cocks often, and fail to feed well. Their flocks soon degenerate to the level of common birds. Others spare no pains or expense to breed from heavy birds of mature age, which uniformly produce large, well-formed turkeys of the most perfect plumage. The Bronze type, we are inclined to think, is the first remove from the wild variety. A native cock, kept with bronze hens, brings a progeny with some of the characteristics of the sire. The half-breeds bred to a bronze cock produce a still farther remove from the wild type. In three or four generations the Bronze type becomes established, and, with care, may be perpetuated indefinitely. The highly bred Bronze stock attains maturity much earlier than natives, and, during the first year, will average from one-half to a third heavier. Our artist has given the general appearance and bearing of this breed, but no art can convey to the beholder the proud strut of the cock, as, with expanded tail and lowered wings, he seems to jar the ground; or the brilliant bronze hue of his plumage, which glistens in the sunlight like burnished gold.

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Going West.—Valuable Information.—All contemplating going west, or having friends thinking of doing so, will greatly value the large amount of general and particular information given on pages 71, 72, 73, 74, 75. The information thus given will answer thousands of inquiries constantly coming from our readers, both here and in Europe. It covers a wide field, presenting impartially the location, prices, etc., of the leading tracts of land now in market, and tells where further particulars, if desired, can be readily obtained. Extra copies of this, as of other numbers, in English or German, can always be obtained of the news-dealers, or directly from the office, at the usual rates.

Please read through the Notes to "Every Reader" on page 81, and, if approved, act upon the hints, this month.

AMERICAN AGRICULTURIST.

NEW YORK, FEBRUARY, 1882.

Suggestions of and for the Season.

The winter thus far (January 1) has been an exceptionally mild one, and farm work may be done on New Year's Day in many localities. This is a great help, as it allows the farmer to get abreast with his work. It also lightens the labor of caring for farm stock, as less food will be needed and greater freedom can be safely given to the animals. February is the last month of winter, and the spring, with its hurry and rush of work, is almost here. It is important that the farmer work now as much as possible to anticipate the operations of spring. Let this he specially a month of planning —and of execution also, as far as may he. There is a lack of forethought on many farms, and to this is due much of the dissatisfaction that occasionally outcrops in the expression, "Farming does not pay." Thoughtful farming is one of the surest roads to success. A farmer who is doing justice to his profession should know in February just what crop each field on his farm is to hear during the coming season. He should plan further than this, and hy following a well selected system of rotation of crops, know what this and that field is to be devoted to for a half a dozen years to come. There is a relation which one crop bears to another that all should understand. A field of corn does not grow to itself alone; and the cost of producing the crop should not all be charged against it. Some crops in themselves may not yield an income, but are indispensable in the cycle, on account of their influence for good on other crops. One of the leading errors in American farming is a lack of system, but as the country grows older this must pass away. The hap-hazard farmer will give place to the one who runs the farm with the method and thoughtfulness that is the hasis of successful factory operations. A farm, instead of being a vast and inexhaustible storehouse of food, must sooner or later be looked upon as a factory that requires careful running, to he made to pay. There is no hetter time to think of these things than now. The whole world depends upon the soil for its daily food; and so long as the human race lasts, farming must be a leading form of productive labor. Good farming pays; and the good farmer is contented with his work, and pushes it forward intelligently. The farm must he studied to see what it is hest fitted for—the farmer becoming year by year more a master of the situation, and therefore more successful.

The making of manure is one of the most important labors of the winter season, or perhaps it should have heen said the saving of it. The value of a manure depends on several things, the leading of which are: the food given the animal; the kind, age, and condition of the animal fed; and, last hut not least, the care which the manure receives after it has heen dropped. Rich manure can only he made from rich food; if straw alone is fed, the manure must he poor, as the animal adds nothing to, hut instead extracts from, the store of plant food in the fodder. When oil-cake and grain are fed much of the Nitrogen and Phosphoric Acid they contain pass through the animals and appear in the manure. The European farmers appreciate the importance of rich foods in their influence upon the manure much more fully than we, as is shown hy the larger exportations of our cotton-seed cake, where it is fed to fattening animals for the sake of the manure. It would be wise economy for us to retain every ton of this rich food, and feed it home. The less the animal has to do the richer will be the manure. Thus a growing animal, or one that is giving milk, or exerting muscular power, as working oxen or horses, will, other things being equal, use up a larger per cent of the fertilizing elements than one that is at case. It should he remembered that the valuable ingredients of a manure are soluble, and may he easily washed away. Therefore the manure heap should not be exposed to rains that will leach out and carry away the fertilizing elements. The best manure is made under cover. It is also essential that the litter that is mixed should become well rotted, and this will suggest that the heap be kept in such a state that decay will be rapid but not wasteful. Well rotted manure may be drawn out upon the land at any time during the winter, and spread evenly over the ground. If put in heaps the covered spots will get more than their share, and sometimes he too rich. This is a good illustration of the leaching which takes place when manure is exposed to rains. We may not have come to that perfection in our agriculture when we need to feed for manure; hut there is no sanction —even if the soil is rich with fertility, for letting the manure go to waste.

The watering of stock is a very important part of the care of all farm animals at this season. The reader's attention is called to an article upon this subject (page 52) hy Dr. Miles. The water should not he ice cold, and to prevent this the troughs should he kept clear of ice, and the water drawn as it is needed. All farm animals should be kept from severe exposure in every way.

Notes on Orchard and Garden Work.

Weather predictions, as a general thing, have little value, hut we feel quite safe in predicting that however severe the winter may be, trees, shrubs, and woody vines will not suffer to any great extent. The most disastrous winter in all our experience was that of 1873–74, when not only exotics, heretofore regarded as perfectly hardy, were killed outright, hut the common Red Cedar, standing where it had grown for a century, was converted into fuel. The winter was not one of unusual severity, and in looking for a cause for this widespread destruction, it was found that there had been no fall rains in the previous autumn. The ground was so dry that it could not supply the demand of the trees for moisture, and these dried, rather than froze, to death. Probably the soil has not been, within the memory of any now living, so thoroughly deprived of moisture, as it was hy the drouth of last summer. When the rains came, they only wet the surface, but down below there was an ominous dryness. When autumn set in, the usual autumn rains did not come, and those who had choice collections of trees were justly apprehensive of a winter as destructive as the one referred to. But early winter set all right; the cold held off, but the rains came, and copiously, and whatever else may happen the trees will not die from the winter drouth. These unusual seasons have their compensations, and there has hardly been a year within our recollection in which so much spring work could he anticipated by doing it in autumn or early winter. As we write at the beginning of the year, the land is in better condition to plow or spade, than it is likely to be in early spring, and he is wise who makes use of every favorable day.

Orchard and Nursery.

This is a good season to renovate old orchards. The cause of the melancholy look of many old fruit trees is partly neglect, but mainly starvation. An ill-shaped tree is proof that the pruning knife has not heen used properly, or that some other matter of attention has been overlooked. It is now too late to make the best shaped trees, but much may be still done in this direction. The leading thing that is usually needed in an old orchard is feeding. It is poor economy to ask a heavy crop of grain and another of fruit from the same piece of ground; and the man who plants an orchard ought to feel that he has pledged himself to grow fruit as the leading crop on the land devoted to the orchard, and keep off every other crop that would injure the growth and productiveness of the trees. There are many old orchards that are not worth renovating. There are no fixed rules hy which one may decide that an orchard had hetter he renovated or destroyed. When the trees are old, and hadly decayed in hoth the trunk and hranches it is not profitable to spend much labor upon them. If the

wood is sound in most cases it will pay to restore them. In many orchards the trees do poorly because their roots are in water-soaked soil—a soil that is not fit for any crop until thoroughly drained. A few rows of drain tiles may make out of an unprofitable orchard one of the best paying investments upon the farm. If the soil is sufficiently dry and the trees still do not grow vigorously and fail to bear, it is strong evidence that the orchard needs to be fed. Such orchards are usually in grass. A heavy coat of manure should be spread upon the surface, and the sod and manure turned under in the spring. As soon as the sods have decayed the land may be cross-plowed, then apply lime or ashes, and harrow thoroughly. Thus far only the underground part of the tree has been renovated. There are some things that may be done to the trunks and branches to aid the better growth of the trees. The old, loose bark, should be scraped off, thus removing the eggs and chrysalids of many insects. This work may be done with a dull field or garden hoe. To make the job complete, a wash made of soft soap may be applied to the scraped parts. The scraping and application of the wash should be done in early spring. The amount of pruning that it will be necessary to do depends upon the state of the tree. An open and well-balanced top is to be gained. It may require the removal of some of the large branches, and the shortening back of others. All large wounds or cut surfaces should be covered with a coat of paint. After all this has been done it may be that the tree is of a poor variety and will need to have its top changed by grafting. This work should be done just as the buds begin to swell. If the tree is a large one it may be best to graft only the central portion of the top the first season. Grafting is planting a cutting in another tree instead of the soil, and as great care should be taken in the selection of the cions as in that of the trees in an orchard. The implements necessary for grafting, and the manner of performing the work are fully described and illustrated in the Notes for February, 1880, to which all interested in this matter are referred. It should be understood that grafting is not a difficult task; it is within the reach of any thoughtful orchardist.

The trees that are to be set the coming spring should be selected now, and the orders sent to the nurserymen that they may fill them properly. "Tree pedlers" have a poor reputation for honesty, and should be left alone unless one is sure of the nursery that they represent. It is best to buy directly from reliable tree growers and, other things being the same, as near home as possible. Should the trees be frozen when they arrive, place them in a cool place where they may thaw slowly. The following varieties of apples are among the best for general use: *Early*, Red Astrachau, Early Harvest, Golden Sweet. *Autumn*, Gravenstein, Maiden's Blush, Porter, Duchess of Oldenburg. *Winter*, R. I. Greening, Golden Russett, Red Canada, Northern Spy. For Pears the best may embrace: *Early* Doyenne d'Eté, Manning's Elizabeth. *Summer*, Bartlett, Clapp's Favorite, Giffard. *Autumn*, Seckel, Duchesse d'Angouleme, Doyenne Boussock. *Winter*, Lawrence, Vicar of Winkfield, and Winter Nelis. Many of the good varieties of peaches are local, but one will not go amiss with Early York, Early Crawford, and Old Mixon. The Early Richmond, Black Tartarian, and Coe's Transparent, are among the leading varieties of Cherries. The Orange quince is the best well known variety; but Rea's Seedling and the Champion are very promising.

This is a good season to destroy the eggs of the Tent Caterpiller, as the clusters of them are more easily seen now that the leaves are absent. As they are usually glued closely to the small twigs, the best way is to remove them with a knife. Manure may be drawn out and spread in the orchard at this season, and can be done most conveniently with a sled, it passing more easily among the trees.

The Fruit Garden.

There should be a Fruit Garden on every farm for the profit, health, and enjoyment that it brings, where well cared for—yielding a succession of fruits from early strawberry time until the latest grapes are gone. It is our desire that all who have no garden for small fruits may resolve to prepare the ground and plant one the coming spring. The soil for a Fruit Garden should be rich, deep, and mellow, and above all thoroughly drained should it be naturally wet. There is nothing better than well rotted stable manure for enriching a garden soil. The list of Strawberries that may be planted is a long one and has been added to from year to year. Charles Downing, Seth Boyden, Monarch of the West, and Sharpless are all reliable. The Bidwell has proved excellent, and the Manchester is a promising new sort. On heavy soils the Jucunda and Triomphe de Gand do well. Among Raspberries are the Cuthbert, Patrician, and Herstine. The Mammouth Cluster and Gregg are among the best Black-caps for general use. For Blackberries the Kittatinny and Snyder are the best. The Versailles, Red Dutch, and White Grape lead in the Currants. It is difficult to select from the long list of excellent grapes; Concord, Wilder, Brighton, Eumelan, Delaware, and Niagara give a good variety.

The Flower Garden and Lawn.

There is not much outside work in this department during the winter season. Heavy snows frequently come this month, and the evergreens must be looked to, and the snow removed while it is fresh, before it breaks down the limbs. When the snow is deep it will need to be shovelled away from the long lower limbs. This is a good time for making all plans for new paths, flower beds, etc., and if they are extensive it is well to draw up a map of them. The seeds for the flower garden should be selected, and those for the earliest growth may be sown in window boxes, and afterwards transplanted to the garden.

The Kitchen and Market Garden.

The mild weather that has prevailed is unfavorable to the keeping of plants in cold frames, which have thus far required the sashes on for but a few days. Beyond providing thorough ventilation, and shading when necessary, the gardener can do but little to counteract the warm weather that tends to force the plants into growth. Hot-beds will soon be needed in the Southern States. As a general rule, a hot-bed should be started about six weeks before it is time to set the plants in the open ground. A hot-bed is a cold frame with a layer of manure added below the seed-bed, to furnish heat for the forcing of the plants. The materials needed are the frame, sashes, and manure. The usual size of sash is 3 by 6 feet, with five rows of 6 by 8-inch glass, set in bars which run lengthwise. The frame is built of rough boards set in a pit, and extends above the surface of the ground, a foot at the rear, and 4 to 6 inches in front. Slats pass from front to the rear across the top of the frame where the edges of the sashes meet, to hold them in place. The manure may be all from the stable, or mixed with leaves. It should be in a heating state, and put in in layers, and well beaten or tramped down. A layer of six inches of rich soil is put on the manure, in which the seeds are sown. The heat for the first few days will be too intense for the seeds, and they must not be put in until the temperature is not above 80°. Many prefer to sow the seeds in flat boxes or wooden trays about two inches deep. When these boxes are used, the soil over the manure need not be more than 2 or 3 inches deep, and the boxes are set upon this. The hot-bed will need watching after it is sown that the temperature may be kept as near 75° as possible. This may require the tilting up of the sashes when the weather is warm, and closing during nights and cold spells. Besides this the plants must be watered, the soil stirred between the rows, and the plants properly thinned. Plants for the vegetable garden may be started on a small scale in the kitchen windows. Boxes similar to those that are used in hot-beds will serve for this purpose. Such boxes should be watched, watered, turned, etc., day after day. After the plants have grown to some size, they should be "pricked out" in similar boxes, to give them more room to make a good growth in time for setting out in the open ground. The boxes may be set out of doors when it is warm enough, but any neglect to bring them in as it comes on cold may ruin the plants. All seeds which are to be used should be ordered at once. Any old or doubtful seeds, especially those of parsnips, carrot, etc., cannot be relied upon after the first year. Novelties are offered every year, trials of these on a small scale are interesting, but one should never discard old reliable sorts and rely entirely on novelties for a crop. The garden tools should all be put in good order. A bolt tightened up, or a coat of paint, or petroleum, may save much more than the outlay.

Greenhouse and Window Plants.

The plants in-doors should be at their best during this month. The bulbs of the Narcissus, Hyacinth, etc., may be brought from the cellar and forced into bloom. A succession of flowers may be had by sowing seeds of Mignonette, Candytuft, etc. The sand and boxes for the propagation of the Verbenas, Geraniums, etc., will need to be provided now. The importance of securing thorough ventilation for plants during cold weather should not be overlooked, and yet all undue exposure must be avoided. The leaving of the sashes or window open for a half hour when the temperature is too low will chill and injure the tender plants. There will very likely be trouble with insects. Tobacco water sprinkled on kills the green fly, washing with water drives away the red spider, the mealy bug must be picked off with a stick or the fingers. Worms in the pots are removed by turning out the ball of earth, when they may be easily seen.

Durra, Dhurra, or Rice Corn, Etc.

BY J. M. McBRYDE, PROF. OF AGRICULTURE AND HORTICULTURE, UNIVERSITY OF TENNESSEE.

In Kansas and portions of Texas, a new cereal is reported to be supplanting Indian Corn. It is also popular in California, having been introduced there, so it is said, from China. It is estimated that in Kansas 25,000 acres were devoted to this crop in 1880, and the Fourth Quarterly Report of the Board of Agriculture of that State, just published, puts the crop of 1881 at 520,534 bushels, worth $314,787.12. Its great merit, and one that makes it invaluable for those regions, is its power of withstanding prolonged drouths. It is perhaps as remarkable for its multiplicity of names. In the West it is called indifferently Egyptian Corn, Rice Corn, and Pampas Rice. It is a native of the warmer portions of the Eastern Hemisphere, and has been cultivated for ages in Central Asia, and the Nile Regions of Africa under the Arabic name of Durah. Webster gives no less than five different spellings of this word, dhurra, dhura, dura, dhoora, and doura. It is also written, by others, dhoura, dhouro, dourah, dora, and durra. As if these were not enough, it has received, besides the three mentioned above, the local names of Negro Corn, Guinea Corn, Negro Guinea Corn, Chocolate Corn, China Corn, Chicken Corn, Ivory Wheat, Tennessee Rice, Indian Millet, and Great Millet.

Its scientific synonyms are almost as numerous. It is *Holcus saccharratum* of Linnæus, *Holcus sorghum* of other early writers. Some botanists speak of it as *Sorghum cernuum*. As "Sorghum" is a "Smith," and "vulgare" a "John," of the vegetable kingdom, it is not saying much for the identity of the plant to give it its true name, *Sorghum vulgare*. The species breaks into numberless varieties, the two most important being the white and the red. The white, the kind mentioned in this article, is the great bread crop of the Soudan and other regions of Central Africa. English travellers familiar with the Arabic always speak of it as "Dhurra." It is frequently mentioned by Baker in his works on the Nile and its tributaries. In one of these, after describing the method of planting it in the Soudan, he says: "Although not as palatable as wheaten bread, the flour of dhurra is exceedingly nutritious, containing, according to Prof. Johnston's analysis, 11½ per cent of gluten, or 1½ per cent more than English wheaten flour. Thus men and beasts

thrive, especially horses, which acquire an excellent condition." It can hardly be considered a newcomer in this section of country, for N. T. Sorsby, of Greene Co., Ala., writing to the U. S. Commissioner of Agriculture nearly a third of a century ago, makes the following statement in regard to "Indian Millet, or Dourah Corn" (U. S. Patent Office Report, Agricultural, 1854, page 160): "I first saw this plant growing in Georgia, in 1838. The year following, I introduced its culture into this County, where it has been somewhat extensively cultivated since." He speaks of it in high terms, and declares that it grows well on poor soils and in spite of frost, rain, drouth, weeds, or grass. He regards it as exceedingly valuable "for soiling cattle and mules," and also for fodder. He says, "the ears are eaten entire by cattle and hogs." In view of its abundant yield of "stalks, fodder, and grain," he considers it "one of the most valuable of the cerealia," and as not exhaustive to the land.

Killebrew, in his "Grasses, Cereals, and Forage Plants" (page 339), uses almost similar language, and goes on to observe: "About 25 or 30 years ago it [Dhurra] could be seen on the plantation of almost every farmer in the State [Tennessee]. It gave very general satisfaction, and yet it went out as suddenly as it came into popularity. This was due to the cry that it impoverished the land. This verdict was accepted without question, and its culture abandoned; but it is manifest, from subsequent experiments, that it detracts as little from the fertility of the soil as any other cereal, much less than some." Numerous letters of Kansas farmers, published in the Report of the Board of Agriculture of that State for 1880, afford more recent testimony as to the value of this cereal.

In June, 1880, I succeeded in procuring a small quantity of the seed of the Dhurra, or so-called "Rice Corn," from Kansas, and on the 16th of that month planted it on stubble land, from which a crop of wheat had just been taken, without manure. The Dhurra received no fertilizers. The portion, 0.22 acre, thickly drilled in rows 4 ft. apart, gave a yield of 45.4 bu. per acre, the other portion, 0.25 acre, planted in rows four feet apart, and from 12 in. to 18 in. in the row, a yield of only 16.3 bu. per acre. The great difference in the two yields is explained by the excessive tillering of the thinly planted portion—the plants formed more heads than they were able to ripen. The stalks, of which no account was taken, attained an average hight of about 8 ft. The grain was plump, and weighed 60 lbs. to the bushel. As an abundance of rain fell, the drouth-resisting powers of the plant were not put to the proof. In 1881 a piece of stubble was thoroughly plowed and harrowed immediately after the removal of the wheat, and planted the first week in July, a very fertile portion, 2½ acres, in Indian corn, and a very thin portion immediately adjoining, 2⅕ acres, in Dhurra. No manures were used on the preceding wheat crop, but 400 lbs. of the same fertilizer was drilled in with both the corn and the Dhurra. The two portions were planted on the same day, and their subsequent culture was the same. That the fertilizer in consequence of the drouth, seriously injured both crops was shown by 6 unfertilized rows of Dhurra, the superiority of which could be noticed at a considerable distance. When the long midsummer drouth set in, the Indian Corn was in full tassel, from 8 ft. to 9 ft. high, and gave promise of a fine yield. The Dhurra was hardly half the hight, but while the Corn was twisting and burning up from the want of rain and the terrible heat, it scarcely wilted, and continued fresh and green. The drouth dwarfed it, but did not interfere with the filling of the heads, which were almost as large as those of last year, while the stalks were but little more than half as high.

About the middle of September it became evident that all hope of a crop of corn was destroyed. Hardly one stalk in ten had even a green nubbin. It was therefore cut for ensilage on October 5th and 6th. The yield of grain did not amount to 1 bushel per acre. The Dhurra gave, when harvested late in September, 20 bushels of clean, plump grain to the acre. As this plant remains green and succulent after the seeds are ripe, this crop was also cut for ensilage on the same days as the corn. The Dhurra gave 5,543 lbs. of green forage per acre, the corn 8,764 lbs. In comparing the fair yield of grain of the first with the total failure of the second, we should remember the great advantage the latter possessed in the superior fertility of the soil of its plat. These experiments, which were very carefully conducted, are almost conclusive as to the remarkable superiority of the Dhurra in dry seasons. Every farmer should protect himself from the effects of drouth by planting at least a few acres in this cereal. Such a course last year would have saved the farmers of this section many thousands of dollars.

The feeding value of this grain is clearly shown by the results of experiments given in full in the August No. of the *American Agriculturist* for 1881. From these and other tests on a larger scale, made last winter, it appears that it was about equal, pound for pound, to corn meal, or cotton seed meal, as a food for farm stock. These practical tests are supported by the results of analysis. I herewith append the analyses of samples of grain of the crops of 1880 and 1881, recently made by my colleague, Prof. W. G. Brown, of the Chair of Chemistry, and his assistant, Mr. W. E. Moses.

ANALYSES OF DHURRA GROWN AT MISTY FARM.

	1880.	1881.	*Average.*
Water	12.61	12.74	12.67
Ash	1.63	1.42	1.53
Albuminoids	11.45	10.46	10.95
Carbohydrates	74.31	75.38	74.85
	100.00	100.00	100.00

In its percentage of albuminoids it compares very favorably with the other cereals. Wheat grown at the Misty Farm gave 12.79 per cent of albuminoids; Indian Corn grown in Michigan, 11.09 per cent; Oats grown in Connecticut, 9.77 per cent; Rye in Germany, 11 per cent; and Barley, 10 per cent. The grain, ground and bolted, makes a good article of brown flour, superior for cakes to buckwheat. This is not my testimony only, but that of several other parties who tried it last winter. It makes fair brown bread. The meal is, however, inferior for bread-making purposes to corn meal. The silo containing the Dhurra, and the corn ensilage has not yet been opened, and as none of the first was fed green, I am unable to pronounce upon the comparative nutritive value of Dhurra forage.

1880—Population of the United States—Final Census Figures.

Total Population 50,155,783—Increase in 10 Years 11,597,412—(30 per cent).

1870.	States.	Rank.	1880.	Male.	Female.	Native.	Foreign.	White.	Colored.	Chinese.
996,992	Alabama	17	1,262,505	622,629	639,876	1,252,771	9,734	662,135	600,103	4
484,471	Arkansas	25	802,525	416,279	386,246	792,175	10,350	591,531	210,666	133
560,247	California	24	864,694	518,176	346,519	571,820	292,874	767,181	6,018	75,132
39,864	Colorado	35	194,327	129,131	65,196	154,537	39,790	191,126	2,435	612
537,454	Connecticut	28	622,700	305,782	316,918	492,708	129,992	610,769	11,547	123
125,015	Delaware	37	146,608	74,108	72,500	137,140	9,468	120,160	26,442	1
187,748	Florida	34	269,493	136,144	133,049	259,584	9,909	142,605	126,690	18
1,184,109	Georgia	13	1,542,180	762,981	779,199	1,531 616	10,564	816,906	725,133	17
2,539,891	Illinois	4	3,077,871	1,586,523	1,491,348	2,494,295	583,576	3,031,151	46,368	209
1,680,637	Indiaaa	6	1,978,301	1,010,361	967,940	1,834,123	144,178	1,938,798	39,228	29
1,194,020	Iowa	10	1,624,615	848,136	776,479	1,362.965	261,650	1,614,600	9,516	33
364,399	Kansas	20	996,096	536,667	459,429	886,010	110,086	952,155	43,107	19
1,321.011	Kentucky	8	1,648,690	832,590	816,100	1,589.173	59,517	1,377,179	271,451	10
726,915	Louisiana	22	939,946	468,754	471,192	885,800	54,146	454,954	483,655	489
626,915	Maine	27	648,936	324,058	324,878	590,053	58,883	646,852	1,451	8
780,894	Maryland	23	934,943	462,187	472,756	852,137	82,806	724,693	210,230	5
1,457,351	Massachusetts	7	1,783,085	858,440	924,645	1,339,594	443,491	1,763,782	18,697	229
1,184,059	Michigan	9	1,636,937	862,355	774,582	1,248,429	388,508	1,614,560	15,100	27
439,706	Minnesota	26	780,773	419,149	361,624	513,097	267,676	776,884	1,564	24
827,922	Mississippi	18	1,131,597	567,177	564,420	1,122,388	9,209	479,398	650,291	51
1,721,295	Missouri	5	2,168,380	1,127,187	1,041,193	1,956,802	211,578	2,022,826	145,350	91
122,993	Nebraska	30	452,402	249,241	203,161	354.988	97,414	449,764	2,385	18
42,491	Nevada	38	62,266	42,019	20,247	36,613	25,653	53,556	488	5,416
318,300	N. Hampshire	31	346,991	170,526	176,465	300,697	46,294	346,229	685	14
906,096	New Jersey	19	1,131,116	559,922	571,194	909,416	221,700	1,092,017	38,853	170
4,382,759	New York	1	5,082,871	2,505,322	2,577,549	3,871,492	1,211,379	5,016,022	65,104	909
1,071,361	North Carolina	15	1,399,750	687,908	711,842	1,396,008	3,742	867,242	531,277	....
2,665,260	Ohio	3	3,198,062	1,613,936	1,584,126	2,803,119	394,943	3,117,920	79,900	109
90,923	Oregon	36	174,768	103,381	71,387	144,265	30,503	163,075	487	9,510
3,521,951	Pennsylvania	2	4,282,891	2,136,655	2,146,236	3,695,062	587,829	4,197,016	85,535	148
217,353	Rhode Island	33	276,531	133,030	143,501	202,538	73,993	269,939	6,488	27
705,606	South Carolina	21	995,577	490,408	505,169	987,891	7,686	391,105	604,332	9
1,258,520	Tennessee	12	1,542,359	769,277	773,082	1,525,657	16,702	138.831	403.151	25
818,579	Texas	11	1,591,749	837,640	753,909	1,477,133	114,616	1,197,237	393,384	136
330,551	Vermont	32	332,286	166,887	165,399	291,327	40,959	331,218	1.057	....
1,225,163	Virginia	14	1,512,565	745,589	766,976	1,497,869	14.696	880.858	631,616	6
442,014	West Virginia	29	618,457	314,495	303,962	600,192	18,265	592,537	25,886	5
1,054,670	Wisconsin	16	1,315,497	680,069	635,428	910,072	405,425	1,309,618	2,702	16
	Territories.									
9,658	Arizona	6	40,440	28,202	12,238	24,391	16,049	35,160	155	1,630
14,181	Dakota	3	135,177	82,296	52.881	83,382	51,795	133,147	401	238
131,700	Dist. Columbia	1	177,624	83,578	94,046	160,502	17,122	118,006	59,596	13
14,999	Idaho	8	32,610	21,818	10,792	22,636	9,974	29,013	53	3,379
20,595	Montana	7	39,159	28,177	10,982	27,638	11,521	35,385	346	1,765
91,874	New Mexico	4	119,565	64,496	55,069	111,514	8,051	108,721	1,015	57
86,786	Utah	2	143,963	74,509	69,454	99,969	43,994	142,423	232	501
23,955	Washington	5	75,116	45,973	29,143	59,313	15,803	67,199	325	3,184
9,118	Wyoming	9	20,789	14,152	6,637	14,939	5,850	19,437	298	914
38,558,371	Totals		50,155,783	25,518,820	24,636,963	43,475,840	6,679,943	43,402,970	6,580,793	105,465
38,155,505	In the States		49,371,340	25,075,619	24,295,721	42,871,556	6,499,784	42,714,479	6,518,372	93,782
402,866	In the Territories		784,443	443,201	341,242	604,284	180,159	688,491	62,421	11,683

NOTE 1.—In the above Totals are included 66,407 enumerated Indians, of whom 21,841 are in the States, and 44,566 in the organized Territories, (Alaska is not included in the Census Report at all).—Of Japanese only 148 are enumerated, viz: 86 in California; 17 in New York; 8 each in Massachusetts and Pennsylvania, and 20 scattering.

NOTE 2.—Males exceed Females by 881,857—a natural result of the proportionately larger immigration of men from Europe. The 3d and 4th columns show where there is the largest difference. The females are in excess in Ala., Conn., Geo., La., Me., Md., Mass., N. H., N. J., N. Y., N. C., Pa., R. I., S. C., Tenn., Va., and D. C., which include the original thirteen States, and Tennessee.—More men have "gone west,"—over half of the excess of males being found in the five States of California, Oregon, Colorado, Kansas, and Texas.

Forcing Rhubarb.—Outside of places where there are professional gardeners, the forcing of vegetables is very little known in this country. People in general are content with "things in their season," and do not trouble themselves to force or retard. Perhaps the easiest vegetable to force is rhubarb; and by taking a little trouble, material for pies and sauce may be had some weeks in advance of the supply from the open ground. The things needed are clumps of rhubarb roots, soil, and a dark warm place. The roots should be dug before the ground freezes, but in most places there is usually an "open spell" this month when it may be done. As fine rhurbarb as we ever saw was forced in a barrel or cask; the roots packed in on a layer of soil and surrounded by it, the cask covered tight, and set near the furnace in the cellar. A box to hold the roots, and set in a cuphoard or closet in the kitchen will answer; or a box or barrel may be placed in the kitchen. Keep moderately warm, and see that the roots are sufficiently moist. A few roots will give an astonishingly abundant supply, much more tender and crisp and less violently sour than the out-door crop.

Editorial Ramblings.

Across the Continent in 4 Days.

Formerly it took several days to go from New York to Chicago. The best time up till within a few weeks was 36 hours. Now trains are advertised to make the distance in nearly 24 hours. The distance from Chicago to San Francisco is, by railroad 2,400 miles. When the tortuous serpentine Union Pacific Road is straighteued, and express trains take the place of the slow trains now moving between Omaha and San Francisco, there is no reason why there should not be a shortening of the time between Chicago and San Francisco, corresponding to that just made between New York and Chicago. Furthermore, trains ought to be able to run with fully as much speed and safety over the level prairies, as over the country between New York and Chicago. We may expect, therefore, in this day of rapid locomotion, to soon see trains advertised from New York to San Francisco in four days' time.

The Union Pacific Road which ends at Ogden, Utah, is building a line through of its own, from a point east of Ogden, westward to the Pacific Coast. On the other hand, the Central Pacific, whose eastern terminus is Ogden, is planning to run a line of its own eastward through Nebraska to the Missouri River. The spirit of competition, therefore, is to give us two lines where one now exists. Furthermore, the Northern Pacific expects to have cars running to the Pacific Coast in two years' time. There is already another line through to the Pacific, via Atchison, Topeka, and Santa Fé. Still another is being built further South. We are promised, therefore, in a comparatively short time, five separate trans-continental railroad lines. The bringing, so to speak, in close proximity, all the different portions of the Republic is not only highly convenient and advantageous to the commercial and travelling public, but it serves to weld and strengthen the bonds among the various States.

Impressions of Western Cities.

The people of Chicago are full of vim and enterprise. They delight in broad thoroughfares, handsome blocks, and beautiful residences. They are very hospitable, and extend a very cordial welcome to people from the Eastern States.

St. Paul wears somewhat of a venerable appearance. There is very old society here. Many of the people pride themselves upon their wealth and their family relations.

Minneapolis looks very like a New England city. The thoroughfares, the stores, the private residences and the numerous church spires, and the people all remind you of New England, and must make a man from Massachusetts feel quite at home.

Omaha appears as if it had been stricken by one of those blizzards which sweep over the prairies. What with paving and the laying of gas pipes, nearly every one of the public thoroughfares is just now torn to pieces, many of them being in an almost impassable condition. There is not a first or second-class hotel in the whole city. In fact, it would be difficult to rank any of them as above third class. Two elegant hotels, however, are being constructed now, and the little hotel which George Francis Train built years ago, in a fit of anger, because the hotel where he was boarding would not furnish him with what he required—is now being rebuilt. There is a superior order of intelligence among the people of Omaha, and they confidently talk of soon having 100,000 population.

Salt Lake City is one of the cleanest cities on the continent. The public buildings present an imposing and impressive appearance, and the streets are daily purified with streams of water which are directed there from mountain reservoirs. During the summer months the Gentiles and the Mormons together are very fond of frequenting the bathing resorts in Salt Lake. We present a view of one of these bathing resorts, which we visited during the season with a number of people from the city.

Denver, like Salt Lake City, is watered by streams of water passing through the streets, and presents a very tidy and cleanly appearance. There is a metropolitan air about the whole place, and at all seasons of the year the hotel registers are filled with the names of Eastern people en route to visit the various mines of Colorado.

Kansas City strikes the stranger as being full of push and vim. One meets rather a heterogeneous population, who are apparently bent on making the most of their opportunities, and coining money.

St. Louis is staid and sober. Northern and Southern elements are gradually blending, and very many of the heavy business men are from the North.

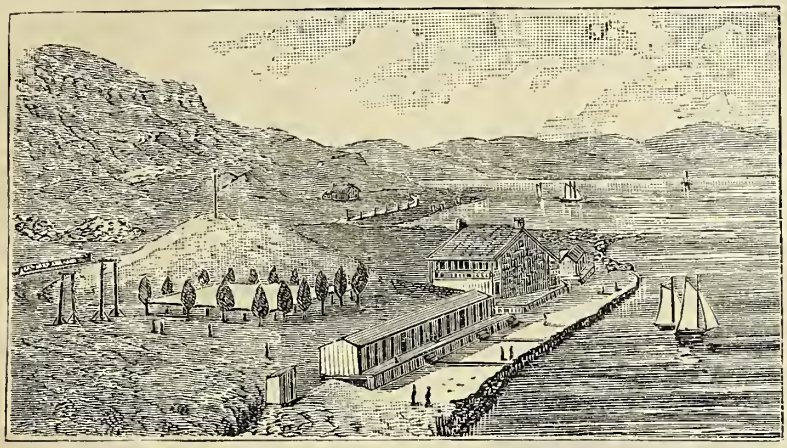
Cincinnati is all activity and bustle, but requires more first-class hotels. There is only one in the city. The business thoroughfares present rather a smoky appearance, and one wonders were the handsome residences are. You have, however, but to ride about on the neighboring hills, and you will find them.

Get Vaccinated.

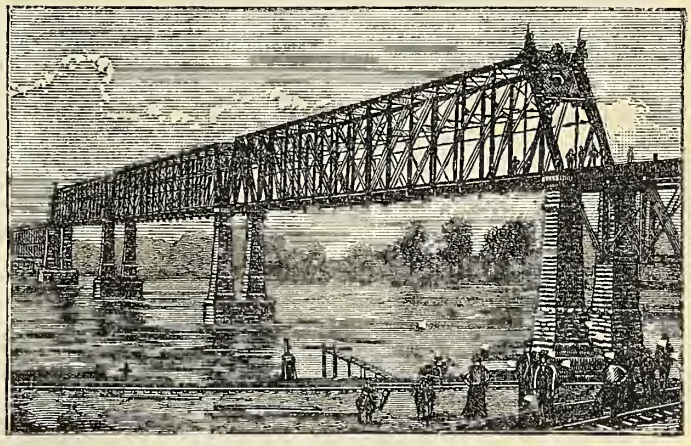
Just at present small-pox appears to be prevalent generally over the country. The newspapers and medical men are discussing whether or not vaccination should be practiced. Do not wait, however, to read the outcome of these discussions, but proceed to vaccinate yourself and family at once. Do not take the chances of having been vaccinated before. It is a too loathsome disease to dally with. There was a lady on the train with us, going to Bismarck, Dakota, who had received a telegraphic dispatch that her husband was lying sick there at the hotel. Judge of the general consternation, when, upon our arrival, and a physician had been called into the hotel, he pronounced it a case of small-pox. There were lively times there for a few moments. The husband had come from Montana, where small-pox prevails the year round, in some of the Swedish settlements, because the immigrants bring with them from the old world a prejudice against vaccination. The following week we proceeded into Montana where most alarming reports reached us of dead and dying small-pox victims. Go to a reliable doctor who will furnish pure virus, and have him vaccinate you at once.

A Fine Piece of Engineering.

When completed, the railroad bridge at Bismarck, over the Missouri River will be one of the finest structures in the United States. A Boston engineer has charge of the work. The bridge will be a mile and a half long, and requires two years more for its completion. We present an engraving as it will appear when finished. The stone for the caissons were brought from Sauk Rapids, more than 300 miles eastward, in Minnesota. These caissons are sunk 40 or 50 feet down in the quicksands of the river, in order to form a firm foundation. It is impossible to find terra firma in the bed of the Missouri, the Platte, and many other streams. When a section of the suspension bridge over the river at Omaha was blown into the river, it quickly disappeared. A few hours later when workmen with necessary machinery endeavored to grapple the section it had entirely disappeared beneath the quicksands, and they were unable to discover it. Some four years ago a water-spout carried away, in the spring, the Kansas Pacific railway bridge over the Kiowa Creek, some 50 miles east of Denver. A freight train plunged over into the treacherous flood. A body of workmen were sent for from Lawrence, 600 miles away, to fish out the train. We were there about five months afterward. The man had recovered the freight cars. They had not yet, however, discovered the engine, for which they were still exploring by means of long poles.



A SALT LAKE BATHING RESORT.



RAILROAD BRIDGE AT BISMARCK, DAKOTA.

Minnesota abounds in picturesque water views. Very many of them are more beautiful than the one a few miles below Minneapolis, immortalized in Hiawatha, as the Minnehaha Falls. Above is a picture of one of the many water scenes one sees in going from Minneapolis to Sioux City. All this North-west region presents a most attractive field for the artist who delights in water views and romantic scenery.

Pretty Water Views.

D. W. J.

Bee Notes for February.

Winter is a good time for the apiarist to study. He who is about to begin may now inform himself as to the methods of his prospective art; while the experienced bee-keeper should give earnest thought to his business, to see how he may improve his methods, or plan for greater success. We will first advise with the candidate for labor in the apicultural field, and then offer suggestioms to be considered by the experienced bee-keeper.

For Beginners.

Those who contemplate starting in bee-keeping the coming season should procure at once, and thoroughly master some one of the several excellent Manuals that treat of bees. This done, the prospective apiarist should subscribe for one of the apicultural papers, several of which are published in this country. The text book study will prepare one to read understandingly the paper, and by such reading a person will keep abreast of the improvements, and so will be in the way to take advantage of all that may help him. Apiculture is advaucing rapidly, and he who does not keep informed will soon be left in the wake of his more enterprising brother. After a thorough study of the subject, it will pay well to visit some wide-awake bee-keeper, and spend a day or two with him. We are happy to state that one does not need to go far now in any part of the country to find such an one. Such visit will do much to remove the timidity that one is apt to feel in approaching these insects. The book-knowledge will become practical, as the various truths and descriptions are illustrated.

The next step will be to purchase some bees. It is usually a mistake to buy more than three colonies. After this it is best to go no faster than one can from the increase of his own bees. The best bees for the beginner are the Italian. These are excellent, and what is more important they are very amiable, and seldom sting. The colonies should be strong, and purchased of a reliable bee-keeper, that there may be no mistake as to their character. The bees should be in a movable comb hive, with a frame of the form generally used in the locality. If one wishes to sell his bees, such a frame will help to dispose of them to better advantage. We prefer, all other things favorable, a frame which is 11½ inches square, outside measure. The beginner will also need a bee-veil, a smoker, and from three to six hives fully equipped. It will pay to purchase an extractor, and from ten to twenty pounds of comb foundation.

The maximum expense the first year will be: book, $1.25; paper, $2; three colonies Italian bees, $30; six hives complete, $12; bee-veil 50c.; smoker, $1.50; extractor, $6.50; ten lbs. comb foundation, $5.00; making a total of $58.75. All of this is permanent capital, and each colony of bees may be expected to give two colonies of bees during the season, or if preferred one colony of bees, and from $5 to $10 worth of honey. The writer, in an experience of fifteen years, has never secured less than that amount. After this first outlay the wise bee-keeper will not expend any money until it is first earned by the bees.

Suggestions to Old Bee-Keepers.

No topic is more worthy the earnest consideration of bee-keepers, than that of bee-forage. It often happens that our bees can find honey for not more than five or six weeks, and yet in that brief time they will often store 50 to 200 lbs. per swarm. What might we expect if the nectar-secreting flower were to bloom the entire season through? The September flow of honey, often exceeding the yield in spring, in some parts of the country, answers the question. How we may supplement the natural yield of honey by judicious planting of honey plants, may well receive earnest thought and consideration during the winter. We already know that by planting Figwort, Cleome, Catnip, Borage, Mustard, and Alsike clover, we may bridge over the famine of honey bloom. Of these, Alsike clover is good also as a forage plant for cattle, etc., and by cutting a portion of the crop as soon as it comes into bloom, we may secure a second crop of flowers, and so a continuous yield of honey-producing flowers. Figwort and Cleome, though of no other use, furnish abundance of good honey, and that too at a time of usual dearth. The thoughtful apiarist may with profit give to this subject much study during the leisure of his winter hours. In winter, the apiarist may get such hives and apparatus as will be needed the coming season. These are now so cheaply made at the large factories, that they may be bought in the "knock-down," and put together during the leisure of winter. It costs but three cents at the factory to make a hive. It would cost the bee-keeper many times this amount. Accuracy is also secured by buying at a factory.

The Pollen Question

has been much discussed of late. Some say there had better be no pollen in the hive in winter. Others say it makes no difference. Mr. Prentiss, a very successful bee-keeper in Ohio, feels certain that the presence of pollen in some of his hives, last spring, cost him nearly 100 colonies of bees. All of his 180 colonies were in fine condition on the middle of February, and those with pollen commenced during the warm days of February to breed rapidly. Some had brood in four and five frames on March 1st. March was very cold, and all the colonies which had commenced to breed so largely died. About ninety colonies had no pollen, and so did not commence breeding, and were saved to give a good profit this past summer. If bees can be kept cool by the use of a cellar or otherwise, until pollen can be gathered, the presence of pollen will do no harm; otherwise it is safer to remove pollen in the fall, by taking from the hives such frames as contain it. Restore these frames to the bees as soon as they commence to gather pollen in spring.

SUNDRY HUMBUGS

Probably no scheme has been presented recently likely to do so much mischief, as one advertised far and wide as OZONE. It promises much and appeals to a vast number of people, especially to farmers. Were a part only of what it promises true, it would indeed be what it proclaims itself:

"The King Fortune Maker."

A concern in Cincinnati, Ohio, advertises "Ozone, a new process for preserving all perishable articles, animal and vegetable, from fermentation and putrefaction, retaining their odor and flavor." Eggs, fresh meats, butter, fruit, and vegetables, are among the things enumerated, and it is stated that "there is nothing that Ozone will not preserve." It is claimed that "a fortune awaits any man who secures control of Ozone in any township or county." The advertisement shows:

"How to Secure a Fortune with Ozone,"

which is, in brief, to buy "a test package of Ozone" for $2.00, and try it on eggs or other perishable articles, and then to buy "an exclusive county or township privilege." This very attractive advertisement has appeared in a great many papers, and it may be looked at from two points of view.

Ozone is Advertised for Sale;

not only in packages, but "exclusive rights" are offered to purchasers. Is the article offered, that which is known to science as *Ozone?* or is the name of a not thoroughly understood chemical substance or agent made use of to sell an entirely different thing? In an article elsewhere, entitled "What is Ozone?" we have endeavored to show in brief the important characters of Ozone. It will be seen that Ozone is only known as a *gas*, and can not be sold in packages. The very offer to sell "a test *package* of Ozone" is of itself an absurdity. Had the venders been sharp enough to offer packages of materials for making Ozone, they would not have shown the folly of their claim. We are quite sure that, whatever these people offer, what they sell

Is not Ozone,

as that has never yet been produced in an isolated form: it is only known as a gas mixed with oxygen or the air, and hence can not be sold in packages at $2, or at any other price. As the article this company offers is not Ozone, they are placed in the position of selling something else under that name.

What do they Sell as Ozone?

Their directions for the use of the preserving stuff in their packages require one to proceed exactly as he would if he were to make use of Sulphur as a preservative—that is, by burning to produce Sulphurous Acid. The article to be preserved being placed in a tight vessel, not over two-thirds full, the "Ozone powder" is to be burned in the air of the vessel. The "Ozone powder" is *black;* its blaze is *blue*, and its odor takes us back to the days of brimstone matches! Sulphur properly employed may be sometimes made useful as a preservative, but why color it black, and why call it Ozone? This Ozone matter is perhaps the meanest humbug of 1881. The advertisement was widely published, both in papers that will publish anything that will pay, and in other journals that are more careful as to what they print. The "Sunday School Times," Philadelphia, Pa., in its issue for Dec. 17th last, apologizes for having published the advertisement. It says: "But subsequent personal examination has convinced the Publisher that some of the declarations in the advertisement are unqualifiedly false, and that, however, good 'Ozone' may be as a preserver, the statements of its Cincinnati advertisers concerning it are not worthy of confidence." The "S. S. Times" goes even further in making amends. It says that if any of its subscribers have been led to purchasing sample packages, and are dissatisfied with the results: "Our Publisher will, upon their application, refund to them the money they have paid out for such packages." That is honorable at least. If, instead of promptly rejecting this advertisement, our own publishers had inadvertently admitted it, they would doubtless do as the "S. S. Times" proposes to do. Will the publishers of other respectable journals who have issued the advertisement, do the same now? Will this lesson lead them to be more guarded in the future? We hear that the advertising agency that placed this pernicious advertisement has recently failed. We hope that we have heard the last of Ozone.

Patents, Patent Solicitors, and Dealers in Patents.

It is a matter of regret that business at the Patent Office at Washington is not so simplified that any citizen of the United States can deal directly with it, and himself take out a patent on his own invention. At present it is necessary to employ a Patent Solicitor or Patent Lawyer to do the business. A few years ago we asked the then Commissioner of Patents, why an inventor could not do business directly with the office. He replied that while he would give an inventor every facility in so doing, he would not advise the attempt, as the Patent Laws, which he had no hand in making, were so intricate and in such confusion, as to require an expert to avoid mistakes which might invalidate a patent. As the Patent Office is probably the only department of the Government that is carried on at a profit, why can it not itself employ the needed legal help? *This ought to be done*, and we ask the present Congress to take action in this direction. Why can not the laws be so simplified that any one can understand them? But we must take things as we find them, and as Solicitors must be employed, every inventor should endeavor to

Employ only those who are Trustworthy.

Several complaints have been received of one Barritt, in New York City, as taking money and giving no service in return. It would appear that others besides ourselves have had complaints of him, as his name is honored by a place in the Official Fraud List. This Barritt proposes to obtain patents in Canada, but the "N. Y. Weekly Sun" some time since gave an official note from the Deputy Commissioner of Patents at Ottawa, Canada, that "the gentleman does not transact any business with this office," and adds: "We have frequent complaints from citizens of the United States who have paid him money to obtain patents in

Canada, and where he has made no application." From what we hear of Mr. F. Barritt we can not recommend him....

New Subscribers and New Readers

come as a matter of course in large numbers at the beginning of each new year. To many, if not all of these, our manner of dealing with Humbugs is something new, and these new comers often write us about matters that we have treated of frequently and disposed of long ago. To such we may say, in brief, that we can "show up as a humbug" no one without abundant evidence that the party in question is engaged in schemes dangerous to the community. No anonymous letters are noticed. If a charge is to be made, do it in an open manly fashion. Say nothing that can not be proved, and sign your own name to it. To farmers we would say, as spring approaches, you will be called upon by various persons with new machines and implements. It is so rarely that a farmer can afford to neglect his farm work and undertake the sale of machines, that it will be safe, as a rule, to decline all such temptations. A large share of these offers are fraudulent and their whole object is, under one pretence or another, to get

The Signature of the Farmer,

who should *sign nothing*, under any pretext whatever, for a stranger; do not even give your address —"just as a memorandum." When least expected this address will turn up as a signature to some kind of a promise to pay. Avoid every kind of "Gift Distribution," or easy way of making money. No matter by what name it is called, the scheme is likely to be fraudulent. Let every farmer and others, who live in the country, be sure that trees and shrubs with fruit of heretofore unheard of excellence, or flowers of unsurpassed beauty, are not introduced by hawkers and peddlers. If a peddler has a new and wonderful fruit or plant, it is one that no reader of the *American Agriculturist* wants to buy.

Swindling in Mackerel.

This deserves a notice, if only for the novelty of the thing. Pennsylvania is the field of operations, and the operators are said to be well dressed and of polished manners—swindlers always are. They offer farmers mackerel in half-barrels at very low prices. When the purchaser opens the package he finds a thin layer of fish on top, while the rest is filled with rubbish. The preparation and the handling of such bulky parcels must be so troublesome as to make this far from a profitable enterprise.... Various inquirers ask about the "Denton Manufacturing Company," stating that they have sent money, but can get no Washing Machines. We understand that the "Company" has come to an end, and satisfaction is promised....Several apparent "swindles" are under investigation, which will be reported by us hereafter, whenever proved to be bogus. For an alphabetical list of about Three Hundred doubtful parties or concerns, see *American Agriculturist* for November last.

Profit in "Walnut" Planting.—"C. C. S.," has seen "in the papers," that young "walnut-trees" will mature so rapidly in 10 years, that a tract of 200 acres will, in that time, yield $150,000. He writes for information on the subject. So it seems that this venerable news item has started on its rounds once more; we hoped that it had gone to its rest years ago. It illustrates the vitality of such items and the manner in which careless statements may convert a fact into nonsense. The original statement was not about walnuts at all, but about Hickories, and started in this way. When Mr. A. S. Fuller, in 1866, wrote his little hand-book, "The Forest Tree Culturist," the growing of forest trees was a new subject to our farmers; to illustrate that in some cases it might be profitable, he made an estimate to show what might be the returns from an acre sown to Hickory nuts. If these were in rows four feet apart, the trees one foot distant in the rows, an acre would contain 10,890 trees; when five to eight years old, every other tree should be taken out, and would bring as hoop poles $217.50. In three more years another thinning of every other tree would yield $272. This is as far as Mr. F. went with figures, but remarked on the value of the trees left. Some itemizer taking the statement could safely estimate that the whole product, if sold at the end of 10 years, would bring $750, and to make the figures large, he only need to assume there were 100 acres of such trees, $75,000, but that was not a round enough figure, so he estimated that 200 such acres would bring in the handsome sum of $150,000. It is strange that he stopped here. This is the foundation of the "Walnut" story which has puzzled many others besides our friend "C. C. S."

Live Stock Trade of 1881, and One of Its Lessons.

Great hopes were awakened in 1880, of an immense European demand for our Live Beef Cattle, for the substantial reason that New York City shipped about 85,406 live bullocks, and 316,466 quarters of fresh dressed beef in 1880, against 33,295 live cattle, and 288,116 dressed quarters in 1879. The anticipations for 1881 have not been realized; the exports, instead of advancing, have fallen back to 38,923 live beeves, and 287,302 dressed quarters, and the shippers also claim to have lost money. This has not come from loss of popularity of American fresh beef in Great Britain or on the continent, for it has steadily grown in favor.

There are three or four causes for the decline, which happily will not be permanent, for it is undoubtedly true that our broad western pastures, with unlimited supplies of fattening corn, in average years, can produce fresh meat, and put it in the markets of Great Britain and some other European markets at lower rates than it can possibly be produced on their limited areas of high priced land. Three of the reasons for the decline are:

First, owing to a succession of bad grain seasons, the British agriculturists turned their attention more to live stock, and the past year there was temporarily a much larger supply of home raised meat. This may continue during 1882, for though increased attention is again given to wheat and other grain, on account of the more encouraging crop of 1881, and the great advance in breadstuffs, this will not operate at once upon stock farming.

Second, the depressed condition of farming and manufacturers left far less resources among the masses abroad for buying meat, while the boom in business, the higher wages and better employment in our country largely increased the home consumption of all meats, and especially those of better shipping quality. This advanced the average wholesale price of beef in New York fully ten per cent over 1880, and of shipping grades still more, and which rendered exporting less profitable.

Third, superior qualities of beef can alone compete in the foreign markets, and only these grades can ever be shipped at a profit, as a rule. But the supply of such beef, and of good mutton, is quite limited in this country, the great mass of cattle being "natives," yielding only medium quality of meat. The demand for shipping in 1880, led to a gathering up from all over our country, of all available cattle of the higher grades, including many that would have ordinarily been kept for another year's growth and feeding. So, during 1881 there was scarcely more of such cattle to be had than were required by our own increased consumption of this class.

The Lesson indicated above is one we have often urged, and it is now enforced by the results, viz., the importance of greatly increased and immediate efforts to *raise the quality* of cattle in all our western pasture fields. Texas cattle will continue to be driven to the northern and mid-region pastures, and, if well fed, will supply a fair quality of meat for ordinary home consumption. But all western breeders, and those of Texas as well, should spare neither effort nor expense to secure at once as the sire of every calf to be grown, a thorough-bred or high-grade Shorthorn, or other improved breed. It will pay every way. A Shorthorn steer will at least grow as much, and be as mature, at three years old, as a native at four years old—a gain of a whole year's feeding and time and interest, and quite enough to warrant a high rate for the service of a good sire. Then the higher market price which the better animal will bring, with the same expense for care, freight, commissions, etc., will pay another large premium.

It comes to just this: intelligent, enterprising farmers and stockmen can not afford to grow ordinary animals. They had better sell off a part of a herd and put the avails into better breeding blood—blood that will soon raise the quality of the balance of their herds. The supply of high-grade bulls is still limited, and the prices high, but when a single bull will in a year produce a hundred or more progeny that will, by saving of time, and by greater value, at two or three years old, be worth $20 to $40 more per head than the average natives, any one can see the advantage of securing such animals at almost any cost. When one smaller farmer, or stock-raiser, can not meet the expense, several can combine and procure one or more animals for common use.

While the price of all cattle sold in New York Markets during 1881 has averaged a trifle over 10 cents per lb. for the estimated weight of the dressed quarters, the lower grades have sold at times even below 7c., and the best grades up to 13c. and 14c. and above, with the estimated dressed weight greatly in favor of the better animals.

N. Y. Live Stock Market Summary for 1881.

Beef Cattle.—Despite the decline in exports of over 45,000 head, this market, which feeds a considerable adjacent territory and the large steamers and other shipping, has taken, and paid 10 to 12 per cent advance for 5,000 more beef cattle in 1881 than in 1880. Total receipts, in round numbers:—

1881	684,000*	1878	545,000
1880	677,000	1877	480,000
1879	570,000	1876	477,000

*An average of (about) 2,200 for every work day in the year.

Average price for the estimated dressed weight of the quarters for all sales, 10 cents and 2 mills per lb.

Sheep and Lambs.—The exports of live sheep were only about 10,000 in 1881, against nearly 40,000 in 1880, and of dressed carcasses (fresh) 70,000 in 1881, against 83,000 in 1880, yet this market took nearly 90,000 more Sheep and Lambs in 1881 than in 1880, the receipts being, in round numbers:

1881	1,770,000	1878	1,350,000
1880	1,680,000	1877	1,210,000
1879	1,550,000	1876	1,248,000

The dry pastures of autumn caused a great rush of sheep to market towards the close of the year, sometimes over 50,000 in a week during August, October, and December, and prices declined greatly, some of the poorest grades selling as low as 2 cts. per lb. live weight early in December, though the best sold then at 6c. The closing rates of the year were 4c. to 7c. for Sheep, and 5c. to 7½c. for Lambs, or about 20 per cent below last January.

Milch Cows.—The receipts at the New York markets fell off to about 6,500 for 1881, against 6,600 for 1880. The natural increase of offerings occurred the first half of the year, but dairy and milkmen were obliged to increase their number of cows during the excessive drouth of summer and autumn, fewer were sent to market, and prices of good cows went up $5 to $15 per head.

Veal Calves.—The receipts during 1881 and 1880 were the same, about 185,000 each year, averaging full 3,500 a week, the year beginning and ending with about a thousand head, and running to 6,000 to 8,000 a week in May and June. Prices varied greatly, being highest in November, March, October, September, December, and July—that is, 3c. to 10c. per lb. live weight; and 3c. to 7c. or 7½c. in April, May, and June.

Swine.—The increased packing at the west is diminishing the number of live hogs sent to New York. The receipts here for 1881 were a little over 1,500,000, or about 30,000 a week during 1881, against 1,750,000 in 1880, or 33,500 a week. The usual fall and winter rush did not come. The prices during the year ranged at 5½c. to 7c. per lb. live weight, closing at 6c. to 6½c. or 6¾c. for extras.

What is Ozone?

Most persous have, in their reading, come across the statement, as illustrating the wonders of chemistry, that the Diamond and Charcoal are identically the same in composition. However unlike in external appearance they are intrinsically one and the same thing, being both forms of the element Carbon. This is, in a general way, true, but the statement would be more striking and nearer to accuracy if Lampblack was named instead of Charcoal. Carbon exists not only in these two dissimilar forms, but in three, the Diamond, Lampblack, and Graphite, or Black-lead, such as lead pencils are made of. Carbon is by no means the only substance that is known in very unlike forms. Sulphur and Phosphorus, for example, are known in conditions as much unlike those in which these substances usually appear, as are the different forms of Carbon. We cite these cases, in which the same substance exists in unlike forms, in order that we may the better describe Ozone, which is an unusual form of a well-known substance. Those who have been near the spot when some object has been struck by lightning, have no doubt noticed a peculiar odor in the vicinity. This odor is commonly described as "sulphureous," though it is really very little like that from burning brimstone. The same odor may be noticed in a room where a powerful electrical machine is operated, and on a very clear, cold night, when the *Aurora borealis* is visible, a similar odor may be often observed. No doubt most of our readers have observed the peculiar odor referred to in one or the other of these cases, while chemists have had occasion to notice its presence in several of their operations. That which thus manifests itself by its odor has received the name of *Ozone*, from the Greek word "to smell," and careful investigations have shown that this odor is not due to a new substance, but is produced by the well known and important element, Oxygen, in a peculiar condition, or state, and differing from ordinary oxygen in some such manner as charcoal or lampblack differs from diamond. Ozone, then, is oxygen in a peculiar condition. It has not been separated in a pure state, but is only known when largely mixed with the air or with oxygen. Even when it contains but a very small proportion of Ozone, air is exceedingly irritating, producing coughing, and to small animals is readily fatal.

The most marked character of Ozone is its oxidizing power; silver is a metal which does not readily rust or oxidize when exposed to the oxygen of the air, but it is readily oxidized in an atmosphere containing Ozone. It is found that Ozone is an active bleaching agent, destroying coloring matters rapidly, and it attacks organic matters of all kinds that may be present in the atmosphere, hence it is regarded as a powerful disinfectant. Ozone may be regarded as a most important agent in nature, concerning which chemists have learned much, and we may expect that their investigations will be of great value in the future. This agent no doubt plays an important part in agriculture, and we have yet to learn much of its relations to plant life.

Ozone, for experimental purposes, always much diluted, may be produced by electrical apparatus made for the purpose. It is most readily prepared by placing in a glass jar a stick of phosphorus, that has been scraped clean under water, and pouring into the jar tepid water enough to partly cover the phosphorus. A part of the oxygen of the air in the jar unites with the phosphorus, and a part of it (the oxygen) is changed into Ozone, which is recognized by its odor and by chemical tests. We do not give this as an experiment to be repeated by those who are not familiar with phosphorus, and the danger that attends the incautious handling of it. Those who would know more about this active form of oxygen, will find in Prof. S. W. Johnson's admirable "How Crops Feed," an account of its production and some of its uses in the economy of nature.

Osage Orange from Cuttings.—In response to a request made last month, "Farmer," of Raleigh, N. C., reports fine success in raising Osage Orange from cuttings, and gives his method. He makes in rich, moist soil, trenches eight or nine inches deep, and three feet apart. The branches (straight shoots of the previous season, we assume) are laid in the trenches and covered with soil which is to be packed down firmly. When the sprouts from these branches grow to be eight inches high, take a very sharp spade and cut straight down at intervals of six inches, leaving one or two shoots upon each piece of the branch, packing the soil well down with the feet and watering if necessary. The next spring, with a chisel made for the purpose, cut off below ground all superfluous shoots, leaving one or more to grow, as may be desired, though it is best to leave but one. When of sufficient size to plant in the hedge, assort and set those of uniform size together in order to have a regular growth.

About Catarrh and Bronchitis.—Simple Remedies.

The general prevalence of catarrhal affections is indicated by the great number of advertisements of nostrums for their "sure cure." There is, perhaps, more money *wasted* for quack medicines of this kind than for almost any other class. Many of the ailments of people are imaginary, and in such cases any inert medicine, or one simply a stimulant, if puffed strongly enough to enlist the *faith* of the purchaser, will often prove effective. A catarrh is an actual disease, requiring something more than faith in a nostrum.

What is catarrh? The term is popularly applied to an affection of the nasal organs, but has a wider application. The "mucous membrane" is the lining or covering of all internal passages of the body which communicate with an outer opening, and it may be said to be the extension of the external skin over into the interior cavities. It lines the mouth, nose, lungs, stomach, intestines, and urinal organs. Catarrh is a disease characterized by an increased production or secretion of unhealthy mucus fluid in the mucous membrane. So we may have catarrh of the stomach, catarrh of the intestines, of the bladder, of the throat, or lungs, or it may be confined to the nasal passages. Most diarrhœs, and frequently dysenteries, are merely intestinal catarrhs.

The fluid secreted in the mucus membrane of the passages through the nose to the throat is directly exposed to the air, and soon thickens. This produces additional irritation. If this mucus secretion is found in the bronchial or upper air passages of the lungs, or is drawn there from the nose in breathing, the irritation is called "bronchitis."

Catarrh is often the result of general weakness or debility, arising from any cause, such as insufficient food, mental anxiety, foul air, etc.; also of taking cold, or exposure to dampness, sudden changes in the weather, or an unusual season. In the latter cases it may be epidemic, that is, generally prevalent. Catarrh may be acute and temporary, but may become chronic, or seated. It may be local, that is, confined to a single organ; or it may be general, extending to the greater part or the whole of the mucus membrane.

From the above it will be readily understood that the best preventive, and often the best remedy, is to secure a vigorous condition of the whole system, by nourishing food, exercise, pure air, and, if need be, by bracing up with simple tonics, as quinine.

Nasal catarrh, which is popularly understood by the word catarrh, refers to the mucus inflammation of the air passages extending through the nose over to the throat. At first it affects only the direct openings, and is easily remedied. If long continued, or suddenly severe, the inflammation may extend up into the numerous bony cavities between the eyes and in the middle of the forehead, where it is more difficult to reach, and if continued long, it destroys the bony structure.

Simple Remedy for Catarrh and Bronchitis.

It is now generally known that Carbolic Acid is strongly disinfectant, and very usefully applied to putrid sores or purulent wounds. Wood *Creosote* is similar, is decidedly antiseptic, and quite volatile. It is therefore natural to suppose it would be useful when applied to catarrhal and bronchial affections which arise from diseased or putrefying mucus. We learned of its use for this purpose from Dr. Pescetto, a leading physician in the noted Italian Medical School in Genoa, Italy, from whose conversations we gleaned portions of the important article on "Catching Cold and the Remedies," given in last December's *American Agriculturist.* We have since recommended the following treatment in many cases with the best results. It can do no harm, is simple, and is eminently worthy of trial, both for temporary and chronic affections.

For Bronchitis.—Get from the druggist's a little good Wood Creosote. Put two *drops* of it into a bottle holding a pint or so. Pour in a little more than half a pint of clear water, and shake it well; also shake well *always* before using it. Take a mouthful of this, throw the head back, gurgle it some time in the throat, and then swallow it. Repeat this every two hours, more or less, so as to use up the liquid within 24 hours. For each subsequent 24 hours, use *three* drops of the Creosote in 3 to 4 gills of water. This 3 drops a day may be continued as long as any bronchitis appears. Two to four days is usually enough, though it may be continued indefinitely without harm.

For Catarrh.—Prepare the Creosote water as above, in any amount, at the rate of one drop of Creosote to one gill of water (4 drops to the pint), or a little more water if the Creosote be very strong and the water too irritating. Make a fresh mixture once in two or three days, and as much oftener as more is needed. Take a handful of this water, previously well shaken, and snuff it through the nose into the mouth, and eject it. A little going down the throat will do no harm. Do this two or three times, and repeat it at bed-time, in the morning on rising, and, if need be, occasionally during the day. In fact, keep the nasal passages washed out with the Creosote water. Its vapor will even penetrate the bony cavities, and also be drawn into the lungs with useful results. It destroys the purulent mucus, and tends to prevent its further secretion. It is useful for any discharges from the nose or lungs produced by colds or general weakness.

For bronchitis, and especially for catarrh, good rare cooked beef or other nourishing food, and quinine if needed, to obtain and retain a vigorous system, are capital aids to the Creosote or any other medicine.

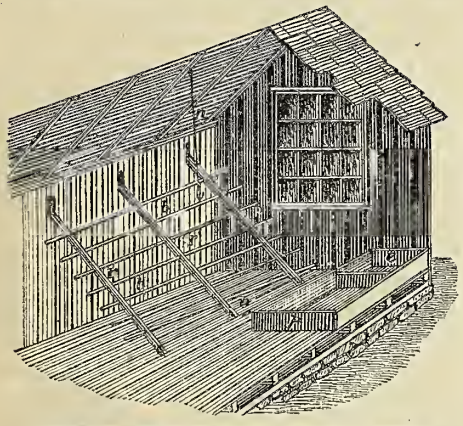
A Physician's Opinion of the Above.

To insure accuracy, as usual in such cases we sent a proof-slip of the above to a very competent regular physician, who returned it without correction or addition, except as follows: "*The above is valuable and entirely reliable, and should be widely read. Nine-tenths of the people who take nostrums for catarrh have no such disease, but have been made to believe they suffer from it by the quacks who sell their useless and pernicious stuffs for the cure of catarrh at an immense profit.—A common "cold" is an acute Catarrh, and properly treated is soon well. Chronic Catarrh of any part of the mucus tract is not so easily cured, but fortunately is much more rarely seen by physicians even than people usually think.*"

Chrysanthemums for the Window.—The following hint by a correspondent of the "Gardener's Chronicle" (Eng.), is worth remembering until next fall. Good branching shoots, with as many blooms as possible, are cut 18 inches long, more or less. These are inserted in five-inch pots filled with pure sand, one or more, as needed in each. Set the pots in water until bubbling ceases; support each branch with a neat stake; moss over the top of the sand, shower from a watering pot, and the job is done. Chrysanthemums so treated and supplied with water as needed, will last a fortnight or more. This will allow the out-door chrysauthemums to be utilized for the window and for indoor decoration, and avoid much of the taking up and potting now necessary if we would have these brilliant autumn flowers in the house.

Poultry House Conveniences.

The raising of poultry year by year is receiving more attention, and anything that will add to the ease in management is gladly welcomed by the admirers of the feathered tribe. The practice among farmers of letting their poultry roost about the farm buildings, upon harrows, plows, wagons, and farm machinery is growing less each year, as many of them are building suitable poultry houses. In the engraving is shown a neat and handy arrangement in perches, of which *r*, *r*, *r*, are scantling, eight feet in length, two inches thick, and three inches wide, made of some tough light wood. The upper ends are hinged to the side of the building, four feet apart, and are connected with roosts or perches one inch in diameter, or what is better nail octagon strips fast to the supports. Perches should be placed about one foot apart. At any time when it is desired to gather up the droppings, the end of the frame-work is raised sufficiently to engage with the hook on the support *n*, the whole arrangement being up out of the way, for thorough cleaning. At the corner of the building, opposite the roost, is placed a box, *p*, containing ashes, road dust, etc., that the fowls may dust themselves. The box should be two feet square and about one foot in hight, and should be kept half filled with dusting material, more particularly during winter. In the corner is placed a box, *e*, and should contain a supply of gravel and broken oyster or clam shells. The foregoing conveniences cost but little and will prove valuable additions to any poultry house. L. D. S.



INTERIOR OF CONVENIENT POULTRY HOUSE.

Rabbits or Hares.—It may be well, now that we have in mind the subject of cheap food, to remind farmers that they, as a general thing, overlook or reject in the Rabbit a kind of food that city people, in its season, look to for both its cheapness and excellence. It may be that from the injury they sometimes do young fruit trees, farmers look upon rabbits as vermin, but whatever the reason, the fact remains that farmers ordinarily do not make use of these animals as food. During the early winter months (their sale later being unlawful), we find them, at the current market prices, not only a cheap, but a choice form of animal food. Our animals, called rabbits, are all hares, but as they are best known as rabbits, we will call them so. They are easily trapped or shot, and those who, from any prejudice, reject them, forego that which many regard as excellent food. Rabbits, more than a year old, or the young ones towards the opening of spring, are dry and tough, and not desirable, but from September onward, they are excellent. As with other wild animals, their flesh is exceedingly digestible, and though somewhat dry, this can be remedied by the manner of cooking. One method is to cut up the rabbit in small pieces and stew thoroughly with water enough to make a rich gravy, and serve with boiled rice. They are very acceptable if cut in pieces and fried somewhat, and then water enough be added to make a brown stew, or they may be cooked in a pie, made like other meat pies, with potatoes, and using onions, etc., for seasoning.

Amounts Lost from Various Foods through Non-Assimilation.

BY PROF. F. H. STORER, DEAN OF SCHOOL OF AGRICULTURE, HARVARD UNIVERSITY.

As the readers of agricultural literature are no doubt aware, a large amount of labor has already been expended of late years by chemists in determining the comparative digestibility of many of the more important kinds of fodders which serve for feeding animals; and much knowledge of very high value has been gained by these researches. As a natural consequence of the success which has attended these investigations of the food of cattle, renewed attention has been given to questions relating to human foods; and, now that the methods of investigation have been sufficiently perfected, several physiologists have succeeded in experiments made with men, in the same general way as those previously made with animals. That is to say, they have determined the comparative digestibility, or assimilability, of a number of foods which are in common domestic use. It has been found, however, much more difficult to carry out these "digestibility experiments" with men than with animals, because it is by no means easy for any one to continue to eat the same kind of food long enough for a satisfactory experiment. It is of course highly desirable in such trials to avoid complex mixtures of foods, in order that the degree of digestibility of any one particular kind may be determined with the utmost certainty. But, no matter how palatable a simple food may be to a man at first, it has been found that it will, almost certainly, become repugnant to him after four or five days. It then not only disgusts him to such an extent that a great effort has to be made in order to swallow it, but it is liable to bring on trouble in the bowels and to cause diarrhœa. Most persons, doubtless, are apt to believe that any one might easily live for several days on bread alone, or on milk, or eggs, or meat; or even on potatoes, rice, or Indian meal; for in some parts of the world, as is well known, entire populations are nourished well-nigh exclusively by one or another of these substances. But it has been found by the German experimenters that none of these things, taken by themselves, are adapted for feeding Europeans. In civilized communities every one is so accustomed to a varied diet that comparatively few persons can be found who are able to eat a single substance for several days consecutively, and many people are forced to give up the trial after a few meals, no matter how strong their desire to persist may be. In the experiments now in question, it was quite exceptional to find persons, in any walk of life, who could continue to eat large quantities of simple, plain food for tolerably long periods—a fact, by the way, which strikingly illustrates and emphasizes the importance of a varied diet, in ordinary life.

Most of the figures of the following table were deduced by Rubner, of Munich, from the results of a very elaborate and painstaking research made by him:

Kind of Food Eaten.	*Percentage of the Dry Food Lost as Excrement.*	*Percentage of the Nitrogen Of the Food which goes to Waste in the Excrement.*	*Carbohydrates*
Mixed Diet	5½	?	?
Flesh	5 or 6	2 or 3	——
Eggs	5½	2½	——
Milk	8 to 10	7 to 12	——
Milk with Cheese	6 to 11	3 to 5	——
Legumes	?	10½	——
Rice	4	25	1
Hominy	6½	19	3½
Potatoes	9½	32	7½
Maccaroni	4½	17	1½
Maccaroni and Gluten	5½	11	2½
A kind of Cake, called "Spætzel"	5	20½	1½
Butter, with some Bread and Beef	7	11	6
Fat Bacon, with some Bread and Beef	8½ to 9½	12 to 14	2 to 6
Butter and Bacon, with some Bread and Beef	10½	9	7
White Bread	3½ to 5½	19 to 26	1 to 1½
Coarse Rye Bread (Black Bread)	15	32	11
Cabbage	15	18½	15½
Yellow Beets	21	39	18
Beer	5½	?	?

It is to be observed that the figures of the second column of the table give no more than an approximate idea of the value of each of the foods enumerated. A more precise conception of these values may be had by comparing the figures of column two with those in the third and fourth columns, which give the percentage amounts of Nitrogen and of Carbohydrates that have escaped assimilation. It is noteworthy that the chemical composition of dung is often very unlike that of the food from which it has been derived. It does not at all follow, for example, that the dung will be highly nitrogenized when food has been eaten which is particularly rich in nitrogenous constituents, for it may happen in this case that a large portion of the Nitrogen is voided in the urine. Rubner found, for instance, 6½ per cent of Nitrogen in dry excrement from a meat diet, though the flesh had contained 14 per cent of Nitrogen; in dry excrement from milk he found but little more than 4 per cent of Nitrogen; while he found as much as 8 per cent of Nitrogen in the excrement from white bread, which, as compared with meat and milk, is a substance to be regarded as poor in Nitrogen. On referring to column four of the table, it will be seen that much larger amounts of Nitrogen went to waste in the case of vegetables which were themselves poor in Nitrogen than in that of the so-called animal foods, such as flesh, eggs, and milk, which contain a large proportion of this element. Indeed, it is probable that the Nitrogen in the animal foods is really assimilated well-nigh completely, and that the larger part of what little Nitrogen is actually found in the dung from such foods is actually part and parcel of certain biliary products, secreted from the body, which have done duty in the process of digestion. In this view of the matter, such excremental Nitrogen cannot properly be classed with that wasted from the food through non-assimilation. Some of this biliary Nitrogen occurs, of course, in all excrement, about as much in one kind as in another,

and a mental reservation must always be made on account of it.

Several curious points of detail have been noticed in these researches. It appears, for example, that hard-boiled eggs are assimilated by healthy men just as completely as roast beef is; though it may none the less be true that the flesh is digested and assimilated in less time than the egg, and that the organs of digestion are put to less trouble in dealing with it. It has been shown also, by several different observers, that bread alone is an insufficient food. On a bread diet the body gives out each day more Nitrogen than is assimilated from the food, and the coarser the bread so much the worse for the consumer. It appears from the table that milk is not so completely assimilated by adults as would have been supposed at first sight. Milk is distinctly inferior to beef and eggs, in this respect—and is even worse than some of the foods of vegetable origin. The reason of this peculiarity appears to depend in good part upon the large amount of ash-ingredients that are contained in milk, and which are not assimilated by the body. This remark applies particularly to Lime, which is abundant in milk, and which passes out from the body in the solid rather than in the liquid excrement. On leaving the ash-ingredients wholly out of the account, it appeared that the dry organic matter of milk was assimilated almost as well as that of flesh and eggs; though the percentage waste of Nitrogen from milk is noticeably large—perhaps because of the large amount of this element which is taken into the digestive tract when nothing but milk is eaten. There is, of course, a limit to the digestibility of every food, milk included. Speaking in general terms, however, it is simply the ash-ingredients in milk that are not needed by adults which are discarded. In harmony with this fact, it has been noticed that milk is assimilated more completely by children than by adults.

The completeness of the assimilation of the "Carbohydrates," that is to say, starch, from foods rich in this constituent, is specially remarkable. It appears that men are able to digest and absorb very large quantities of starch when it is presented to them in suitable forms, as in rice, white bread, and maccaroni; unless, indeed, a great deal of fat is eaten at the same time with the starch, in which event some of the latter is apt to escape digestion. In the case of potatoes, black bread, beets, and cabbage, on the other hand, the Carbohydrates are utilized much less completely; doubtless because they are of less digestible kinds in the vegetables, and also because each of the foods last mentioned produce large quantities of bulky, watery excrement which passes rapidly through the intestines, and carries with it much carbohydrate and other material, which would doubtless have been assimilated but for lack of time. Not only are the intestines overburdened by these coarse foods, but the partially digested material is subject to fermentations which produce butyric and lactic acids, and a quantity of gases, all of which appear to hasten the evacuation of the intestines, and consequently occasion less complete assimilation of the constituents of the food than would otherwise occur. Any solid, non-digestible substance added to food, such as bran, for example, or cellulose prepared from straw, makes the assimilation of the digestible constituents of the food less complete than it would be if the indigestible substance were absent. Of a given amount of starch, that would be completely assimilated if eaten in the shape of rice, white bread, or maccaroni, no inconsiderable portion goes to waste if it be eaten in the form of black bread. In experiments where the diet consisted of beets alone, which were eaten, of course, in large quantities, the intestines were so overloaded that excrement began to be discharged five or six hours after the first meal was eaten.

Rice is assimilated pretty well, particularly as regards its starch (Carbohydrates). Indeed, in so far as dry substance goes, rice is assimilated as completely as flesh; it is the nitrogenous constituents chiefly which fail to be absorbed. So too with Indian corn; a good deal of its Nitrogen is not assimilated, while its Carbohydrates are pretty thoroughly absorbed. With potatoes, also, a very considerable part of the nitrogenous constituents are not assimilated, and the amount of excrement is large. Particularly large amounts of excrement were produced when the food consisted of beets or of cabbage. As the table shows, very considerable portions of these foods were not assimilated. As a general rule fat is assimilated well-nigh completely, even when eaten in large quantities, though exceptions to this rule occur, and are not always easy to explain. The fat of Indian corn, for example, and that eaten with cabbage appear to be less easily assimilated than some others. Butter is assimilated better than fat bacon, and the appearance of particles of unchanged bacon in the excrement would seem to show that the cellular envelopes of such fat hinder its digestion; but fat from the marrow of bones, in spite of its cellular condition, is assimilated almost as completely as that in butter, though this fact may perhaps depend on the easier fluidity of the marrow fat, and it is possible withal that the cells of the marrow may be less tough than those of the bacon.

As a matter of course, such researches as these tend to elucidate those which have related solely to cattle; and they teach anew the lesson that to each kind of animal should be allotted the foods best suited to its special requirements, and to the organs of digestion peculiar to its species. They impress most forcibly upon the farmer, and upon every one who has to do with animals, the paramount importance of attending to the digestibility of foods.

The Wheat Moth and its Work.

BY PROF. A. J. COOK, LANSING, MICH.

Mr. J. W. Curtis, of Kliger Lake, Mich., sends me some Wheat that is seriously injured by the Wheat Tinea (*Tinea granella*, Linn). He states that the wheat, stored in the wheat-house at the depot is being badly injured by this pest. Not long ago I received some wheat from a miller in Hillsdale Co., Mich., with the same complaint.

Dr. Harris, in his admirable treatise, "Insects Injurious to Vegetation," page 496, describes this pest so well that I will only briefly mention its peculiarities and appearance. The little moths that lay the eggs are like the common Clothes' Moth, in fact they belong to the same genus. Both species are small, less than one-half inch long, are buff colored, with a satin-like gloss to their wings, and both have their wings fringed with fine hair-like scales. The larvæ (fig. 1) that bore into the wheat, and by eating the kernels do the very great mischief, are like the larvæ of the Codling Moth, the Apple-worm which is so familiar to all, except that the Wheat Worm is a little more hairy. The larva, as it works, spins a sort of web which holds a number of the kernels of the grain in one mass. (This is shown by Harris in his Plate VII, fig. 7, as in fig. 2 below). Like the Clothes' Moth, indeed like most all of our worst insect pests, the Grain Tinea is an imported insect. I have known of its committing injury several times before in our State, and in every case it remained but a little time and then disappeared. I have supposed that our climate was probably too severe for the welfare of the insect, and so each time after its introduction it soon became extinct. It is to be hoped that my conjecture is right, and that the moths will continue with us but for a short time. This remark applies equally well to the little Wheat Weevil, which has appeared in our State several times, and soon disappeared without any treatment to drive it away.

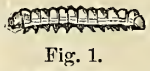


Fig. 1. THE LARVA.

I know of but one efficient remedy for this insect, and that applies as well to the weevil and to the Angoumois Grain-moth, which is said to do no little damage in the southern and southwestern part of our country. I have frequently seen every kernel of corn in samples from the Gulf States perforated by this latter moth-larva. The remedy proposed is Bisulphide of Carbon. We have only to pour a quantity of this into the bin at the bottom of the grain to kill all of the insects. It is very penetrating and volatile, and equally deadly to all of the insect tribes. I think that a half pint of the liquid would destroy the insects in a bin of 50 to 100 bushels of grain. Not having experimented with grain in such quantities I cannot give the precise quantities of the liquid to be used in different sized bins of grain, but this can easily be determined by trial. To apply the remedy it is desirable to pour the liquid in at the bottom of the grain. To do this we can take a hollow iron cylinder—a gas-pipe will do well—and fit into it a wooden rod which shall be a little longer than the iron tube. One end of the rod is to be made sharp; now place the rod inside the tube, and, with the sharp end down, force them both to the bottom of the grain; then having withdrawn the rod, turn in the liquid through the tube, which should be pulled out. The insecticide of course is left at the bottom of the grain, and, being very volatile, soon diffuses through the mass and converts the bin into an insect cemetery.

Fig. 2.—CLUSTER OF INFESTED GRAIN.

There is one very important caution to be remembered in applying this remedy. Bisulphide of Carbon is as explosive as it is volatile, and if a lighted match or lamp is carried into the granary or wheat-house before the vapor has passed off, there may be an expensive fire. The liquid is so disagreeably odorous that we may know when it is present, and if we use a medium amount of caution, we need have no fear. The explosive material is so readily diffused that, with a little care to ventilate, it soon escapes, and the danger of an explosion is gone.

Water for Live Stock.

BY DR. M. MILES, "HOUGHTON FARM," MOUNTAINVILLE, N. Y.

The importance of an abundant supply of water for the animals of the farm, at all times and under all circumstances, as an essential condition of the healthy and efficient performance of the functions of animal life, is too often entirely overlooked. The analyses of the carcass and offal of oxen, sheep, and pigs, made at Rothamsted, by Lawes and Gilbert, in their investigation of the composition of the increase of these animals, in fattening, shows that the percentage of water in the fasted live weight of the entire body, is as follows:

	Water, per cent.		*Water, per cent.*
Fat Calf	63.0	Half-fat Old Sheep	50.3
Half-fat Ox	51.5	Fat Sheep	43.3
Fat Ox	45.5	Extra-fat Sheep	35.2
Fat Lamb	47.7	Store Pig	55.0
Store Sheep	57.3	Fat Pig	41.4

From these figures it will be seen that water constitutes more than one half the live weight of the average animal of the farm, fat animals containing somewhat less, and lean animals considerably more. In man, physiologists estimate water to constitute from $^2/_3$ to $^3/_4$ of the weight of the body. In the functions of nutrition and excretion, the water of the system performs an important part. The food taken into the stomach must be in the soluble form before it can be taken up by the absorbents and transferred to the blood, which in its circulation throughout the body carries the elements of nutrition to the various tissues, where the materials required for their particular use are appropriated. But this transformation of the food into substances that can be assimilated and made use of by the tissues, is not a simple one; it must be acted upon in its course through the organs of digestion by various fluid secretions from the time it is introduced into the mouth until it is received into the circulation. The work performed by the system in this elaboration of nutritive materials cannot be fully appreciated without reference to details. The saliva is secreted by the glands of the mouth to moisten the food, so that it can be readily swallowed. The specific action of the saliva upon the composition of the food, we cannot now stop to discuss. The quantity of saliva secreted by animals is surprising. Experiments by Lassainge show that 100 lbs. of dry hay fed to a horse required a secretion of 400 lbs. of saliva; 100 lbs. of oats required a secretion of 113 lbs. of saliva; while 100 lbs. of green food required but 49 lbs. of saliva to prepare it for swallowing. Concentrated foods, like grain, therefore, seem to make a smaller demand upon the glands for the secretion of saliva than the coarser foods like hay; and dry hay imposes a much greater tax upon the salivary glands than green feed. Green feed has not only an advantage over dry, in the amount of saliva required to prepare it for digestion, but the results of the German feeding experiments seem to indicate that it is much more readily digested. M. Colin estimates the saliva secreted by a horse when fed on dry food, at 92.6 lbs. in 24 hours, and the quantity secreted by a cow under similar conditions at 123.5 lbs. in 24 hours. Now, if the blood in the system is estimated at from 50 to 75 lbs., the secretion of saliva alone must have a marked influence upon its distribution in the system as well as upon its composition.

The saliva is, however, but one of the many secretions that are required to prepare the food for the process of assimilation. When the food enters the stomach the gastric juice is elaborated to transform the albuminoids into soluble peptones, and then as it passes into the intestine, an emulsion of the fatty materials, and the conversion of starch into sugar, take place through the influence of the pancreatic and intestinal secretions. The bile is also secreted in considerable quantity to perform its peculiar functions, and the absorbents are actively at work to transfer the nutritive materials to the blood as fast as they are prepared by the digestive fluids.

As the soluble nutritive materials are taken up from the intestinal canal by the vessels that perform this function, a fresh draft is made upon the blood by the digestive organs for the elaboration of their peculiar secretions, so that a rapid interchange of fluids is taking place between the intestinal canal and the blood during the process of digestion.

The rapidity with which this interchange of fluids takes place, is perhaps best indicated by the amount of chyle and lymph passing through the thoracic duct, which, in ruminants, as shown by M. Colin, is from eighty to nearly two hundred pounds in twenty-four hours. In a cow, weighing 1,000 lbs., the principal secretions and excretions may be estimated as follows:

	Lbs. in 24 Hours.
Saliva (dry food)	123.5
Gastric Secretions	100.0
Pancreatic Secretions	7.25
Bile	20.00
Exhalation from the Lungs	10.00
Perspiration	20.00
Urine	21.75
Total	302.50

From this it would appear that nearly one-third of the weight of the body is separated from the blood in the form of secretions required in preparing the food for the processes of nutrition, and in excretions of waste materials that are of no further use in the system. From this enumeration of some of the leading activities of the animal economy, it must be seen that the amount of work performed by the internal organs of the body is not inconsiderable, even when the animal is apparently at rest, and that a supply of water to maintain the equilibrium of these fluids and keep them in proper proportion to the denser tissues, is of great importance.

It will also be readily seen that the supply of water should be constant, or at least frequently repeated, to secure uniformity in the fluidity of the blood and the various secretions. Water must be recognized as a food, and it should be given with the same regularity as other food. Magendie found that dogs, supplied with water alone, lived from six to ten days longer than those that were deprived of both food and water; so that water has undoubtedly an important function to perform in the system, aside from the dilution of other nutritious substances. The addition of green feed, in some form, to the winter ration of our farm animals, will be found advantageous for many reasons, and the amount of water required by them as drink will by this means be diminished.

Winter Exposure of Live Stock.—The importance of giving proper shelter to all farm animals can not be too strongly urged. Looked at simply in the view of dollars and cents, it does not pay to have the sheep, pigs, cattle, or horses, left out of doors in the piercing winter winds. The animal heat must be kept up so long as life lasts, and to do this, either a larger amount of fuel must be consumed, or the fire will be fed by accumulated or stored up fuel in the form of flesh, and the animal grows poorer. It is cheaper, as far as it can be, to keep up the animal heat by shelter than by food. A shivering, suffering animal is not in a profitable condition. There is also an appeal to the humane side of our nature in this lack of comfort. Provide good shelter from the weather for all farm animals, for it pays in more ways than one.

Self-Cleaning Sheep Troughs.

BY L. D. SNOOK, YATES CO., N. Y.

One of the annoyances connected with feeding grain to sheep and other stock is the

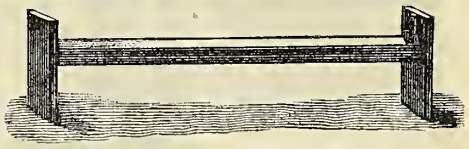


Fig. 1.—A REMOVABLE FEED TROUGH.

liability of the trough to become dirty, when it must either be upset, or cleaned out with a bit of board, broom, or wisp of coarse fodder, as most convenient. Also troughs that are from necessity left out doors during winter, become partly filled with snow many times each week, consuming a great deal of time to clean them. To avoid all this trouble and vexation I have planned the following self-cleaning troughs that are cheap and easily made. The simplest plan is shown in fig. 1; the trough is hung at each end on wooden pins, *t*, *t*, attached to the plank-post. The ends of the trough project upward about ten inches; near the upper end of each is a half-inch hole, that corresponds with one made in the post; by passing a loosely fitting pin through these holes the trough is firmly held in position. During stormy weather or at any time, by turning the trough bottom up, as in fig. 2, and inserting the pin at *n*, the trough is cleaned from all dirt, kept dry and free from rain, snow, or ice. Posts may be, driven in the ground or connected at bottom by a scantling as desired. With the trough shown in fig. 3, pins are dispensed with. It is constructed by cutting a V-shaped notch in the top of the plank post, in which rests the end of the trough. An iron hinge, *e*, at each end connects the top of the post and trough. At any time, simply raise the opposite side of the trough, and fold it

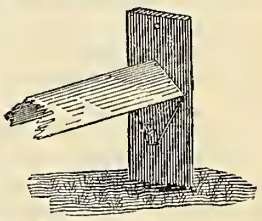


Fig. 2.—TROUGH INVERTED.

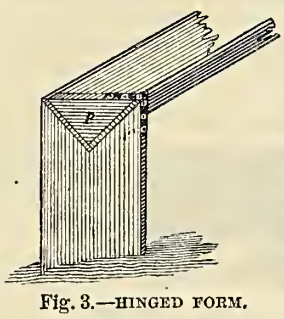
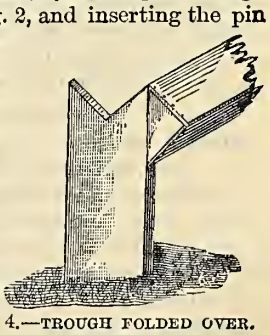


Fig. 3.—HINGED FORM.

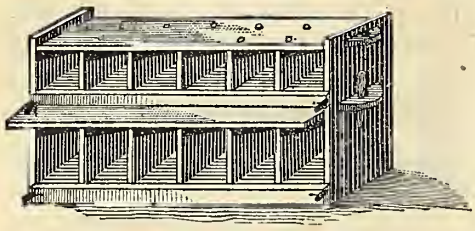


4.—TROUGH FOLDED OVER.

over against the side of the post as shown in fig. 4. A trough in this position is, for all practical purposes, just as good as though bottom up, however by leaving the post nearly as wide again at top, and on a level with the top of trough when right side up, the trough can be turned bottom up, when properly hinged. This trough is also easily made portable by connecting the ends below the trough.

A "Laying Coop" or Nest Boxes.

Mr. J. Stewart has in use a "Laying Coop" made without any nails, and can be quickly taken apart for packing away, whitewashing, etc. It can be made of any size to suit. The

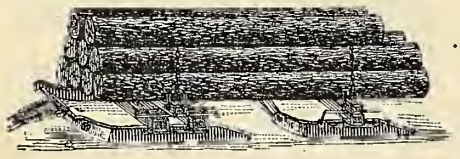


NEST BOXES FOR HENS.

top and bottom boards have tenons on the ends passing through mortises in the end boards, and held in place by wooden pins, as shown in the accompanying engraving. The top and bottom boards have $^1/_2$-inch holes bored through them, which receive pins that pass into the corresponding holes bored in the edges of the partition boards. As these partition pieces are all alike, they are easily put in place. There is a bar or step along the front of the nest to prevent any eggs from falling out—the bottom board may extend forward for a few inches to serve as a place upon which the fowls may alight.

Binding Loaded Logs.

Mr. J. E. Lee, Chippewa Co., Wis., sends a sketch and description of his method of binding logs when a number of them are drawn upon a bob-sled. The binding chains are put over the lower logs, and two top logs are placed above the chains, and by their weight



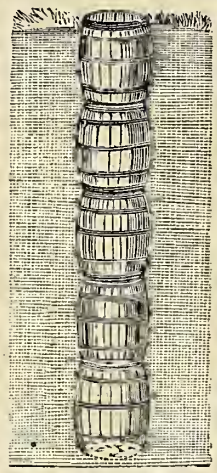
METHOD OF BINDING LOGS.

they hold the chains tight and keep the load secure. Mr. L. hints that the method is not satisfactory where the road is rough or along a hill-side. The style of bob-sled that is used for logging in the timber regions of Wisconsin may be of interest to many.

Sheep Skins.—"A. T.," Canyon City, Col., has several sheep skins, and wishes to know how he can remove the wool without cutting it off. We only know of the tanners' method, which is, to soak the skins (if dry) in water until thoroughly softened; when any adhering flesh, etc., is scraped off by a blunt knife. The skins are then hung up in a close, warm room, where they are kept until putrefaction sets in and goes on sufficiently to loosen the wool, which is then removed, and the skins placed in a lime vat to harden them. After remaining in the lime for several weeks, they are then tanned.

A Makeshift Well Curbing.

Mr. W. J. Dumble, Pembina Co., Dakota, finds the use of barrels very satisfactory for walling up a well. His method is to dig the well the required depth, and place a barrel in the bottom with holes bored in the lower head, and in the sides as far up as the middle hoops, for the entrance of water. Pack the soil closely around the barrel and place a second barrel upon the first one, both the heads being removed. If they do not fit together firmly a few strips and nails may be used. In this way continue until the surface of the ground is reached, a distance of 12 to 16 feet in Mr. D's locality. The barrels, old molasses, etc., can be bought for 50 to 75 cents, and are much cheaper than to use lumber. We give this method with the engraving, as a "makeshift" curbing for families in a new country who must have a well at short notice with little time or money to make it.



MAKESHIFT WELL CURBING.

About Silk Culture.

There is an evident revival of interest in the subject of silk culture as shown by our correspondence. Some write to ask where eggs may be procured, others wish to know how much it will cost to start an establishment for silk growing, and other inquiries are received relating to the matter. Those who have looked into the subject most thoughtfully have come to this conclusion, with which we quite agree. If silk culture ever becomes one of our industries, it must be, at least at first, upon a small scale. It must be a family industry, a part of the farm products, just as the raising of chickens and of bees are at present. Nearly all of the labor required to raise a crop of cocoons is of that light kind that may be performed by women and children, and by those whose feeble health or advanced years will not allow them to join in the active work of the farm, yet would be glad to feel that they were doing something to contribute to the general welfare. While the raising of a crop of cocoons does not require hard labor, it demands intelligent care and attention, which must be given continuously. To care for the worms one day and neglect them the next, would result in disaster. There must be regular feeding and constant systematic attention throughout. By proper management, no doubt an important, though not very large, addition may be made to the income of the farm by the labor of those who might not otherwise be profitably employed, and by affording occupation to such would be useful aside from any money returns. So we feel assured that those who have investigated the subject are right, when they advise that silk culture be undertaken as a home industry. Let it be begun in a small way, and when the business is thoroughly learned, for like every other such industry it must be learned, then if found desirable it may be increased. Begun in this manner, with nothing but what the resources of the farm can supply, even a failure will bring no loss, while the experience gained will be of great value. The letters of inquiry are largely to ask where eggs can be procured, and how to treat them. There is something that goes before this—have our correspondents food for the worms after they are hatched? We do not recollect to have had an inquiry upon the question of a supply of food, yet this is the very starting point in silk culture. One who should buy a herd of cows without considering if he had proper pasturage, would make no greater mistake than do those who propose to raise silk without first providing proper food. What is proper food? It must be some form or species of Mulberry, or the related Osage Orange. Either the common White Mulberry (*Morus alba*), or the Chinese Mulberry (*M. multicaulis*), or some of the new varieties of these, are the best. Very excellent results have attended the proper feeding of the leaves of the Osage Orange, and where there are abundant hedges of this, the raising of silk may be undertaken with a fair prospect of success. If there are neither hedges of Osage Orange or Mulberry trees, then the first step, before considering the procuring of eggs, is to make a plantation of some kind of Mulberry to supply the worms with food; we say "some kind of Mulberry," because if a special plantation is to be made, the Mulberry is preferable to the Osage Orange. The Mulberries must grow at least a year before silk worms are to be thought of, hence the beginning of silk culture is the planting of these trees. The varieties and manner of planting will be given in another month.

How Eggs and "Shortening" Lighten Cake or Bread.—Practical Suggestion.

Most housekeepers know the fact; probably few think of the *why*. Any kind of work is less fatiguing, or at least more interesting, if we understand "the philosophy of it." When the whites, or the whole eggs, are beaten quickly and thoroughly, the albumen swells into a frothy mass, because a great deal of air is entangled in the tens of thousands of minute meshes formed. When this is mixed well into flour or dough, and baked, each air bubble is largely expanded by the heat, thus producing an immense number of small cells which give the light texture, just as is done by the carbonic acid gas produced in yeast fermentation, or by uniting cream of tartar and soda.

Oily substances, as butter or lard ("shortening"), produce apparent lightness, if the dough be rolled out thin and covered with the shortening and then folded upon itself, rolled out, and this repeated a good many times. In this case the moisture in the dough expands into steam, and any air entangled in it is also expanded. The oiled dough flakes prevent the escape of this vapor and air, and the successive flakes are raised up, producing "lightness," though each flake is solid and heavy, and measurably indigestible. It will be readily seen that the lightness will depend upon the number of rollings and foldings. The practical suggestion is, that the oftener they are repeated, even up to 10 or 15 times, the lighter will be the pie crust, crackers, etc. Each application of shortening should be very thin, to avoid too much greasy matter.

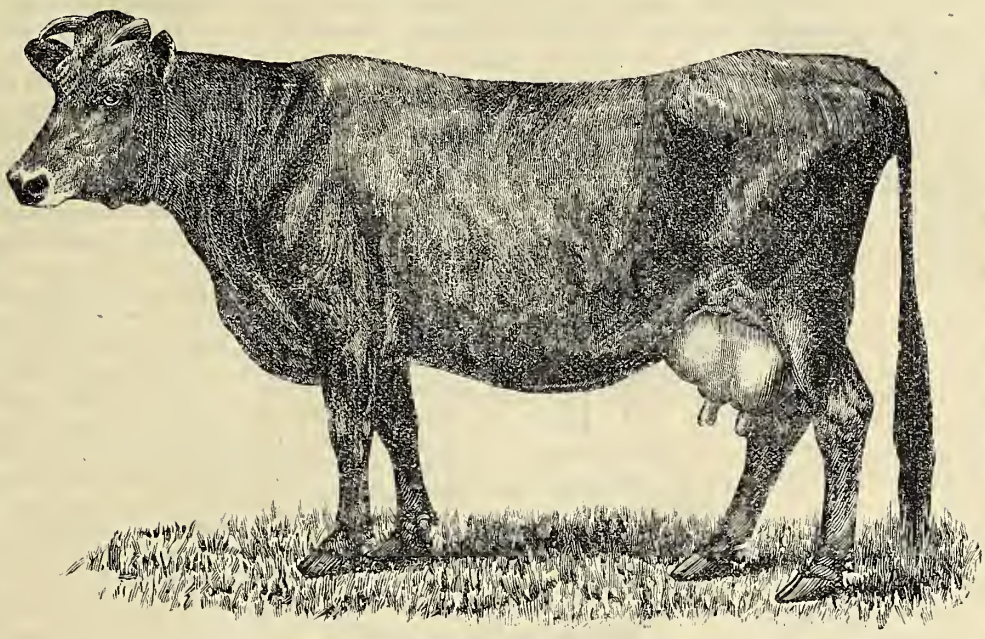
The Jersey Cow "Leda," and her Kindred.

Startling "improvements" in the produce of animals come from decided crosses or out-crosses. A "cross" is the pairing of animals of different breeds. When full-blood bulls are crossed with common or part-bred cows, the progeny are called "grades." An out-cross is the pairing of animals of different *families* of the same breed, and may be more or less violent according to the characteristics of the families. An inferior, ordinary Jersey cow bred to a bull of her own family will produce, in all probability, nothing of especial merit, and very likely a calf less good than herself. If crossed with a bull of an entirely different family—though he may not be individually better than she, will probably produce a calf decidedly better than either sire or dam. The reason of this is that the best qualities of each family are likely to display themselves in the first cross. *Permanent improvement* comes either from careful selection and pairing animals of similar, strongly developed idiosincracies, or from close in-breeding. The latter is probably the quickest and most satisfactory in its results, but must be finally supplemented by the introduction of carefully selected out-crosses in which the most valuable characteristics have been developed and confirmed by in-breeding.

The breeding of Jersey cows was conducted in the most haphazard way for many years in this country. English breeders were at the same time doing better; but after a while the experience and breeding rules which have been observed in the development of other breeds had their influence, and a few Jersey breeders placed the public under lasting obligations to them by laying the foundation of the families of Jersey cattle which have since proved famous and of gread value.

Chiefest among the Jerseys is the Alphea Family, founded by Col. R. M. Hoe, and of this family "Leda," and her dam "Europa," are the most famous individuals. The family is remarkable for having descended from a single pair, and even at the present time females may be found four and five generations removed from old "Rhea" (the mother of the family), in which there does not exist a single out-cross. "Nymphea," a granddaughter of "Leda" offers a marked example of this kind of breeding, and so far as we are aware exhibits not the least weakness of constitution, and has yielded 15½ pounds of butter in 7 days.

The cow "Alphea" (171) gave her name to the family because she lived to a good age, had sons and daughters, and was probably the most remarkable Jersey cow that ever lived, all things considered, that is as to quantity of milk, and amount of butter which she produced, and potency in stamping her own characteristics upon her offspring.

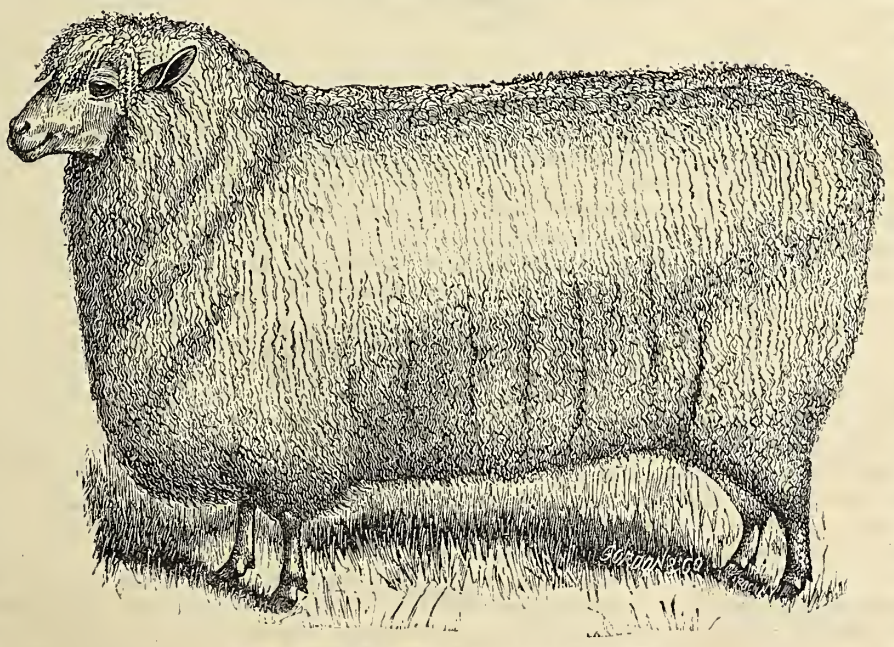


THE FAMOUS JERSEY COW "LEDA."

"Leda" (799), a beautiful engraving of whom we present, was dropped in January 1869; making her 13 years old. Her color is solid dark gray, shading to black, with full black points. She was bought at the sale of the Brightside herd by Mr. Darling, of Darlington, and sold by him at auction last year, with others of his herd, where she was bought by Mr. Simpson for $3,000, who at the time owned, as he still does, several of her immediate progeny and descendants, as well as her dam "Europa." "Leda" herself has never won any special fame as a milk and butter cow, being eclipsed in Mr. Darling's herd by her half-sister "Eurotas." Some of her daughters, however, are already famous. "Clytemnestra," and "Phædra," both by "Mercury" are noble cows, the latter especially a deep milker and rich butter cow. Her daughter, "Clytemnestra 2d," is an 18-quart cow, also, but not tested for butter. "Nymphea," and another granddaughter of "Leda," was tested after dropping her third calf, and the yield was found to be 15½ pounds of butter in one week. Thus it seems to be clear that the butter-yielding tendency of these cows has not been seriously weakened, if at all, by close breeding, and certainly their constitution does not seem to be impaired, for "Europa" at 16, and "Leda" at 13, have certainly not, by any means, reached the end of their usefulness. The performances of some American cows are so far beyond those of the animals at home in Jersey, that an account of them is received by breeders there with "very extraordinary!"

Cotswold Sheep.

Cotswold Sheep were introduced to the special notice of American sheep breeders by the importations of Erastus Corning, and of Wm. H. Sotham, in the year 1840, and from the increase of these flocks, and many subsequent importations, they have become as well known as any of the improved breeds of sheep. The impetus given to the breeding of mutton sheep by Mr. Bakewell of Dishley, in Leicestershire, through his wonderful improvement of the old Leicestershire sheep, and the establishment of the Dishley breed, as so far superior to all other long wool sheep of England, that the rams were used upon long-wool flocks of all sections, had of course its effect upon the Cotswolds—the breed native to Gloucestershire and vicinity. The firmer and quicker fattening Dishley rams greatly improved these hardy, large-framed sheep, and judicious breeding, with heed to the important lessons which Mr. Bakewell taught, have confirmed and established the breed in such a number of points of superiority, that it is hardly too much to say that it now stands pre-eminent among the long-wool breeds.



THE COTSWOLD EWE "GELLETT'S BEAUTY."

The characteristics of the breed, when well developed, are a large size, with admirable

form; bone enough to carry well a carcass weighing 200 to 250, and occasionally 300 pounds, or even more; early maturity (the lambs also attaining very soon a large size and fitness for market, due primarily to their hardiness, and secondarily, to the great abundance of milk yielded by the ewes); notable prolificacy of the ewes, and their excellent fleeces. In the matter of fleece there has been constant improvement, not only does it more completely cover the body, extending below the knees and the hocks, sometimes even to the feet, and almost all over the belly, but well over the poll. This feature is foolishly valued by breeders, and unshorn locks are left often hanging like a deformity over the eyes of favorite sheep. We must note also as characteristic of the breed, that the mutton is less tallowy, the fat more interlarded, and the flesh more marbled than that of less improved long-wool sheep.

The weight of the fleece is great, considering that it is so free from grease, that of rams weighing usually from 15 to 20 pounds, those of ewes 10 to 16, and the quality of the wool should be fine, lustrous, and well curled throughout its whole length. The length of the staple is sometimes as great as 15 inches, the growth of a single year.

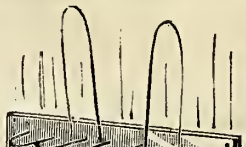
These qualities are impressed with great certainty upon the offspring of Cotswold rams with common ewes, especially with those of a Merino cross, entirely changing the character of the wool and mutton. The resulting cross-bred or grade ewes are not only valuable as breeders of early lambs, when bred to Cotswold rams, but from their hardiness, quiet nature, and large size, are often used to great advantage by those who raise Southdown lambs. These, though by sires of a smaller breed, gain size and quick growth from their Cotswold dams—almost all good milkers—while the Southdown sire puts his grayish-brown face and legs upon them, from which they gain higher favor in the market. The great interest which the public has in thorough-bred races of animals, their propagation and improvement, is that the males may be used to elevate the common herd, and in this regard any pure-breed should be held in very high esteem.

We present in this connection a portrait of an imported ewe, the property of Mr. F. S. Peer, of East Palmyra, N. Y., one of a prize-winning pen at the Royal Show in 1878, and this year winning first, as one of a pen of five, at the Show of the Western New York Ag'l Society, where the medal for the best flock was also awarded to Mr. Peer. The portrait conveys a correct idea of the breed.

Our Export of Petroleum.—The Treasury Department, instead of waiting for the appearance of the Annual Report, has for sometime issued monthly bulletins, giving the transactions in the leading articles of export. That of "Petroleum and its Products" for Oct. last is interesting. To those who can recollect the early days of Petroleum, the figures here given are astounding. Those who know anything of the drug business of 40 years ago, can recollect that there was an occasional call for "Seneca Oil," to be used in liniments, etc. The apothecary who had a gallon of this oil, had a stock for several years. It was said that this oil was found floating in small quantities upon certain creeks, and that Indians gathered it, hence the name "Seneca." This sparingly used Seneca Oil was nothing more or less than what we now know as crude petroleum. The exports of petroleum and its products, during the month of October last, had the value of $6,065,019. What a wonderful product it is—scarcely known 40 years ago, it now brings into the country about fifty million dollars of clean cash yearly, and from countries which can not produce it, but must have it from our American wells. Great is "Seneca Oil."

A Whip Holder.

"M. M.," Orange Co., N. Y., sends a sketch of a whip holder, from which the engraving herewith given is made. The whip holder consists of a series of loops of flat steel, like that used in hoop skirts, fastened into a board. The loops come close together and hold the lash of the whip as it is thrown or "whipped" between them. The whip holder should be fastened to the side of the room, and high enough so the end of the whip will clear the floor, when hung up by the end of the lash.



A WHIP HOLDER.

How to make a Jumper.

A light sleigh is called a Jumper. It may be made of hard-wood poles cut and bent into shape, a few bolts, and a light body or box. The accompanying engravings, made from sketches of a recently constructed "Jumper" will serve as a guide to any one who wishes to provide himself with a light sleigh at a trifling cost. Two hickory poles, for the runners, are dressed down, the smaller ends bent to the proper curve and fastened until they will retain the bent shape. The posts are mortised into these runners and the bench pieces, which latter are firmly fastened together with bolts. The braces and their positions are shown in the engravings. A floor is laid upon the bench pieces, and extends beyond the sides of the box or body. The box may be plain or ornamented in various ways. The one shown has the sides and back flaring. The shafts are fastened to the curved ends of the runners with eye bolts.

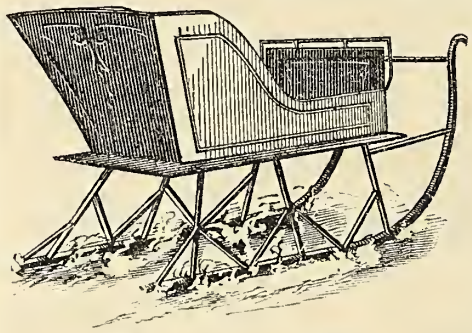


Fig. 1.—A HANDY JUMPER.

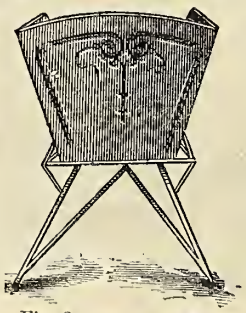


Fig. 2.—REAR VIEW OF JUMPER.

Tim Bunker on Learning from Mistakes.

MR. EDITOR:—The morning we had that first killing frost, early in October, just as I was going out to milking, I saw Seth Twiggs coming up the road at a faster gait than usual, and a stream of smoke behind him like a railroad engine that was just starting. I knew there was a trouble ahead by the extra amount of smoke.

"I'm ruined," said Seth, in a dolorous voice. "Every cranberry I've got is frost bitten, the ice is on the ditches and the vines are as stiff as a poker. There was a good three hundred bushels of them just ready to pick, and they've all gone to the dogs. It's tew bad. And it's the off year tew, when apples is scace, and cranberries is high. Jest think of it, Square Bunker, six hundred dollars out o' my pocket, at one slap. It's jest my luck. If I git a pail full of milk the ceow kicks it over. Never knew it to fail. I'm teetotaly undone forever, Square, and it's no use to farm it in Hookertown."

"Not exactly undone, neighbor," said I. "Tirzah Twiggs made a nice lot of butter this summer and took a premium at the county fair, for butter this fall, where all the best butter makers were in competition. And if I remember rightly, you sold two hundred bushels of cranberries last year, and have about four hundred dollars salted down from that single crop. The saving's bank is not likely to fail, and we don't have earthquakes in Hookertown to swallow up Korah and his host and other sinners who fail to learn from their misfortunes, as fast as they ought to. It would have been a very easy thing to pick you cranberries last week, or still earlier, when it was good summer weather. You had no reason to suppose that the frost was going to stay in the heavens always, to suit your convenience. The fact is, neighbor Twiggs, we may meditate and smoke one day too long, when the harvest is ready."

"I know it," said Seth, groaning. "I know it neow, if I never did afore. Tirzah told me, ten days ago, that I ought to pick 'em right off, but who'd 'a thot o' a killin' frost within twenty-four hours of summer heat!"

Seth subsided, and went his way, not much comforted by the consolations of my plainness of speech. Providence deals kindly with us all, but does not humor our laziness or ignorance. I suppose it is the best way, perhaps the only way, in which the most needed and wholesome truths can be taught on the farm, as well as in the school of morals. There are a multitude of dull scholars in husbandry, who are "ever learning but never able to come to the knowledge of the truth," and they need misfortunes to bring them up to time, and get them out of their slip-shod habits. Seth knew well enough that the cranberry crop in Hookertown matures in September, and that the risk is very great of delaying picking beyond the twentieth. It is more trouble, of course, to color the fruit in the house, but you make sure of saving the crop. Most cranberry growers have learned this, and set their pickers to work not many days after the crop begins to redden. They have learned something by their former mistakes. Nature seems harsh, and fines a man several hundred dollars for a blunder. He cannot very well help learning under this regimen.

We have been a good many years learning what crows were made for, and the lesson is

not very well understood. This year we are likely to get additional light. The spring was wet in Hookertown, and better prospects for grass were never held out. The crop was good, but after it was gathered the grub of the May-bug began to show the results of its depredations, both in the pastures and in the meadows. My attention was called to them by the flocks of crows in the big pasture, and the adjoining fields. I did not suppose there were so many crows in the neighborhood. They frequent the shore in winter, coming long distances to feed upon the clam banks, when food is scarce elsewhere. But their favorite diet in summer seems to be the worms that come from the May-bug. They have great skill in detecting the presence of this grub, and if the crows were protected in their period of incubation, they would become so numerous as to exterminate these pests, or to reduce their numbers so much that they would do no serious damage. In some of my fields the grass roots are destroyed in large patches, so that you can scrape off the stubble with a rake. There can be no good crop of hay until these places are re-seeded. For several generations war has been waged upon the crow, because he pulled corn out in the retired fields on the edges of woodland. Town and State have put bounties upon him, and he has been hunted at all stages of the year, to get the bounty money. The boys have sought out his nesting place, climbed tall trees, and cleaned his nest of the callow young. Men have put a dead carcass back of the barn to entice him within gun-shot, and he has been treated as a deadly enemy. He has been branded with a bad name, and "scarecrow" has been applied to all those non-descript contrivances that disfigure cornfields to keep off the birds. Still he vindicates his right to be, and the response which Nature makes to this unreasoning warfare is, "Protect the crow or do worse." A few hills of corn in spring time is small damage compared to the grass crop of a whole farm destroyed by grubs. On the whole, the wiseacres at the State capital make poor work at mending the legislation of the Almighty. Take care of the crows, and the crows will take care of your grubs.

A large portion of our farmers blunder in stinting the manure they apply to crops. Nothing can be plainer than the impolicy of this habit. Manure makes all the difference, in the older States at least, between twenty and fifty bushels of corn to the acre; ten and thirty bushels of wheat; seventy-five and two hundred bushels of potatoes; unprofitable and thrifty culture. The planting, cultivation, and harvesting of the large crop costs but a trifle more than the expenses of the small crop. The one means success, the other means starvation and emigration. As a rule, in the East, that is the best kind of farming which secures the largest amount of manure, made under cover from stock kept upon the farm. The man, who works his acres on this principle, will soon have the means to add to his home-made manures, concentrated fertilizers to enlarge his business. The greatly increased cotton crop of the South is owing not more to free labor than to the greatly increased use of concentrated fertilizers. Planters are no longer content with half a bale of cotton to the acre. With manure delivered by rail at the nearest depot at reasonable prices, it is no longer necessary to abandon the old fields to Broomsedge and gullies. Cotton can be raised cheaper than ever. The South is learning by its mistakes.

Farming in the East is in a transition state. It no longer pays to raise the crops that were profitable fifty years ago, as many are learning to their cost. They keep on in the ruts, and are starved out. The iron rail and steam put down the concentrated products of the prairies at our doors at less cost than we can raise them. In the more bulky and perishable articles, there is a fair chance for competition and profit. It hardly pays to raise grain for the general market, and the profit is small to raise it for home consumption. Farmers near seaports and railroad depots in large towns, buy much of the grain they feed out. Butchers in the large villages, retail Chicago beef, sent to them in refrigerator cars. The beef we can make with profit must be in connection with dairying, raising working cattle, or some business that pays for the animal before it is ready to fatten. Many of our farmers are getting out of the ruts, and steering clear of the competition of the prairies. In studying this problem there is no help like that of a good agricultural journal. About the biggest blunder a farmer can make is to think he can thrive and make the most of his opportunities without reading and digesting the contents of such a paper. This brings to the farmer the recorded experience of the best cultivators of the country, the philosophy of their failures and successes. Jake Frink is a good illustration of the man who spends his evenings at the corner grocery, and has no time to read. Deacon Smith is one of the other sort, who has read the *American Agriculturist* for nearly thirty years, and makes farming pay. The year is up, and now is a good time to subscribe.

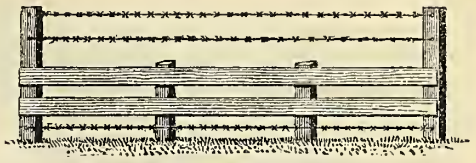
Hookertown, Ct., November 15, 1881. } Yours to command, TIMOTHY BUNKER, Esq.

The Fence Question Again.

BY H. C. WATKINS, MILLS CO., IOWA.

The experience of an average farmer in Western Iowa, leads me to agree with Prof. Knapp in most of his ideas about barbed-wire fences, as expressed in the November number of the *American Agriculturist*. I must confess, however, to a little surprise that among so many good things, the Professor should recommend so many different styles of fence—one for cattle, another for horses, a third for hogs, and still a fourth for sheep. Whether the average farmer, in the practice of a wise rotation of crops and pasturage, shall change the kinds of animals to suit the fences, or the fences to suit the animals, is a problem inferentially submitted by Professor Knapp. As a rule, observation and experience has demonstrated that one kind of fence for all kinds of animals, is best for the soil and animals too. "A change of pasture makes fat calves," is a homely adage, early taught, and not easily forgotten or gainsaid. It is best to change the kind of grazing animals in a stated field as often as convenient without taking into account a change of fence as well. To have a field stand enclosed with a lasting barbed-wire fence, to be grazed only by animals specially suited to the fence until the same decays, would be a startling contradiction of the time-honored quotation, and wholly impracticable.

It was not intended, however, to find fault with any particular style of fence (for anybody can do that much), but rather to show a large family of readers a kind of mongrel barbed-wire and board fence which I have been using for some time. A sketch of a panel of it is here presented:

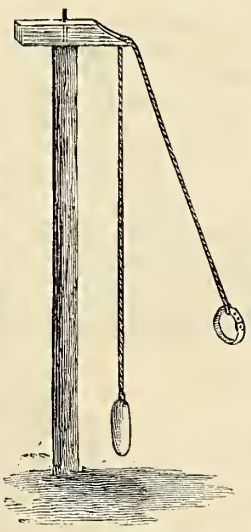


BOARD AND WIRE FENCE.

With me this style of fence is more the outgrowth of necessity than of skill. Enclosing some fields was an old three board fence, with posts 8 ft. apart, that must be renewed. It was very desirable, also, that the new fence should safely enclose hogs and sheep, as well as the larger animals. So, the old fence being torn down, good new posts were placed every 16 ft., a barbed wire made to order with barbs only $2^1/_2$ inches apart, was then stretched and stapled at the bottom of the posts, say three or four inches from the ground: the posts from the old fence furnished two short ones, placed at equal distances between the end posts, high enough only to receive two boards, also taken from the old material and placed thereon, as shown in the engraving, with a four-inch space between the lower board and the wire, and six inches between the two boards. Above these were placed the two barbed wires, leaving foot spaces, the upper wire being 50 inches from the ground. A fence thus built has securely enclosed during the past year horses, cattle (including a bull) and hogs. The more this fence is investigated, the more its practical usefulness and economy will be apparent. Old materials can be utilized, if convenient. It is durable, not top-heavy, horses will not hurt their knees on it, sheep will not scratch themselves on the barbs, hogs will not root under it, and all will pay it due respect.

Another Tether.

Mr. F. H. Fairweather, Kings Co., N. B., has, as he writes: "a tether (of his own invention) which answers its purpose admirably." A post of any convenient length, and sharpened at one end, is driven firmly into the ground. A "turning bar," or "swivel," is secured to the top of the post by a stout pin. This bar may be of any desired length, up to eight feet; it has a hole at one end, through which the tether rope passes. This rope should be sufficiently long to allow the animal a good sweep. With a weight just heavy enough to keep all slack rope from the ground, it is impossible for the animal to get entangled. The engraving above given makes a more minute description unnecessary.



A GOOD TETHER.

A House for Breeding and Slaughtering Swine.

BY COL. F. D. CURTIS.

The plans and elevations here given are for a building of sufficient size for a large farm, where the breeding of pigs and the fattening and slaughtering can be extensively carried on. The building should be 50 feet in length and 24 feet in width, with posts ten feet high. This would give ample room for pens 12 feet deep and 6 feet wide, with the exception of one, which could be made 8 feet wide. For small farms the building need not be so long. The chamber should be laid with matched plank, so that grain may be spread upon the floor and stored there. In the center of the building there should be a cupola, with a tackle to hoist articles into the chamber. The main building should be raised at least two feet, which would bring the floor three feet above the ground, and admit of handy unloading. This would also allow a space for windows in the cellar wall. The cellar should extend under the entire building. A trap door in the ground floor, and under the cupola, could be used to lower heavy articles, and also as a passage for roots, which may be conveyed directly from a wagon to the bottom of the cellar from the door opposite. There should be another outer door and trap through the floor in the end of the building where the stairs lead to the chamber. At this end of the building the pens for the boars should be located, and a door should open outwardly from the end pen, with an inside door to prevent its being broken open by the boars, so that a wagon can be backed up to it to admit of loading and unloading live hogs from crates without any lifting. Two large bins or raceways should be constructed over the cellar stairs leading from the chamber in which to store and conduct grain, one to the ground floor, and the other to the cellar, from which it can be conveyed in a spout directly into the cooking kettle, which should be situated in the cellar at the foot of the cellar stairs (see figures 2 and 3). This is for convenience as well as safety from fire, and to keep the food from freezing. A cistern should be in one corner of the cellar, and a tight partition made across the cellar dividing the cooking-room from the root-room. A tackle in the chamber should connect with the kettle through trap doors in the floors above to allow the raising and lowering of hogs into the kettle for scalding. The largest pen alluded to above should have a sliding door in front, connecting it with the main floor, so that it may be used as a slaughter pen, and the pigs drawn from it to the trap leading to the kettle (see *a*, in figure 2). Figure 2 also shows the position of the stairs to the chamber and cellar, as well as the location of the pens, and the fenders (*f*, *f*) in the pens, which consist of a plank set horizontally against the sides a foot wide and ten inches above the floor. These fenders are for the purpose of keeping the sows from crushing the pigs against the partition. The pump should be on the main floor to make it handy (see *P*), and the water can be conducted in a spout through the trap to the kettle below. The pens connect with each other by sliding doors, and also with the yards in the rear in the same way. Each pen should have a window, and there should be windows enough in the building to make it light.

This description refers to the main building. For a large business there should be an extension 15 feet in length, on the end, in which the kettle is located for dressing, and to hang up the slaughtered animals. This room should connect with the main building by a door opposite the trap leading to the kettle, so that the animals, when scalded, may be lowered to a platform in it. Another tackle should be suspended from the roof in this room, so that the hogs may be hoisted by it from the platform, and swung round to hooks on the outside. In this room the animals can be dressed, and butchering is comfortable as well as convenient. There should be a large sliding door in the front to admit of a wagon backing in underneath the tackle so as to load the pork handily. During summer, and in winter, when not required for butchering, the extension can be used as a sleeping room for hogs. The ground floor of the main building should be laid with 2-inch pine plank matched, and the crevices filled with hot coal tar. The end next to the troughs should be raised 2 inches higher than the other. The bottom of the extension should be on the ground, excepting a plank flooring for the stove and around it; and this can be temporary, as well as the platform on which the hogs are laid after scalding. The inside of the main building should be lined with matched stuff to make it warm in winter. The manure should be thrown into the yards in the rear, which are connected with the pens, and with each other, by sliding doors. Gates lead into these yards (figure 1) through which a wagon can be backed. In figure 4, which is the rear of the building, the position of the gutters is shown. There is a door on the end of the main building, with tackle connecting with the kettle and the platform in the extension or dressing room, through an opening in the backside of the extension.

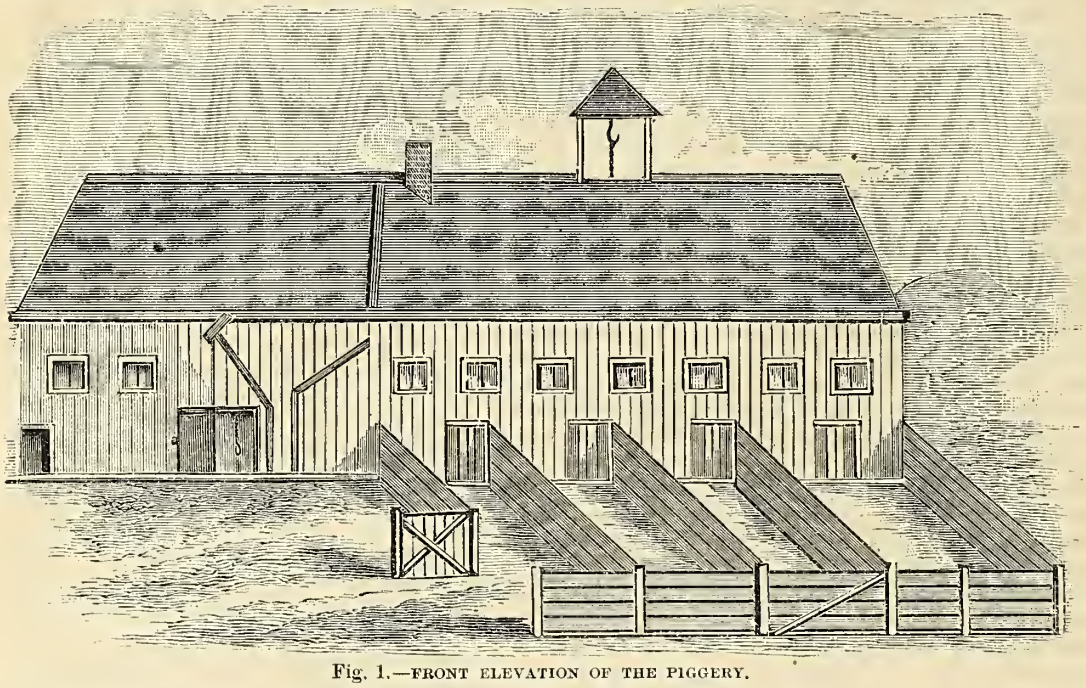


Fig. 1.—FRONT ELEVATION OF THE PIGGERY.

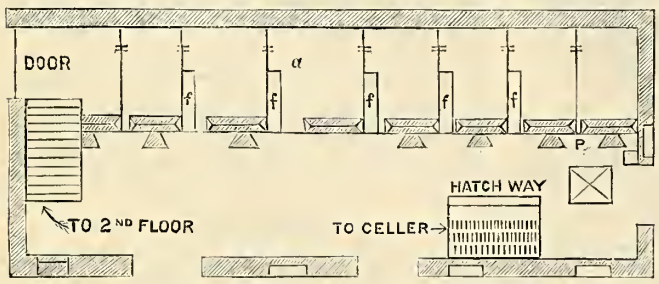


Fig. 2.—MAIN FLOOR OF THE PIGGERY.

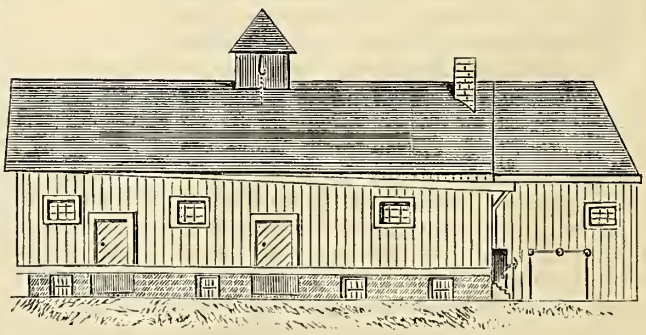


Fig. 4.—REAR ELEVATION OF THE PIGGERY.

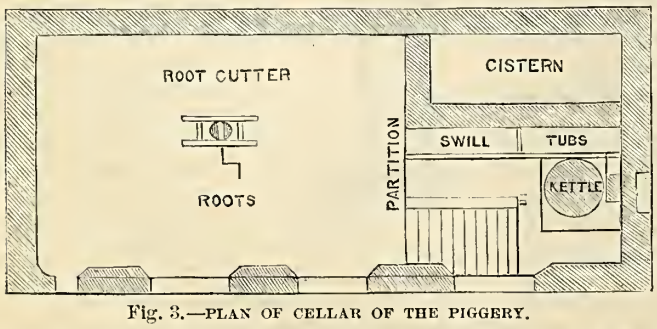


Fig. 3.—PLAN OF CELLAR OF THE PIGGERY.

Earth Worms—On the Farm, in the Garden, and Elsewhere.

As a general thing, we do not take much notice of Earth Worms. The farmer may occasionally think that their abundance indicates rich land, but except when about to take a day of recreation at fishing, he gives but little attention to these creatures. To the gardener they are sometimes an annoyance, when they disfigure his nicely rolled gravel-walk, deposit their casts among the velvety grass of his lawn, make holes in his borders, or, worse than all, establish their own systems of drainage in the earth of his pots. But none of us have looked upon worms as of any great consequence, much less have they been regarded by the farmer and gardener as essential to their daily work, and capable of not only modifying the condition of the soil, but even an agent in bringing a large share of the earth's surface to its present configuration. "Why have we not before seen and known the importance of worms"? it will be asked. Merely because no Darwin has before shown us how to use our eyes. Many have criticised or ridiculed Darwin's views—or rather what they supposed, or were told to be his views, as to the teachings of certain facts. The facts themselves, the clearness and fairness with which he states his observations, are not to be criticised. This wonderful naturalist takes up the commonest things, and when we look at them by the aid of his eyes, we wonder why no one else saw them before. He shows us the end of a bean vine, or the tendril of a grape vine, and we see the most remarkable movements which these plants have been making, unobserved, for centuries. So when he calls our attention to the worms, which bring up their pellets of earth from below, we at once see that this work cannot have gone on, for centuries upon centuries, without producing results, and this creature from being "nothing but a worm," becomes at once an important farm and garden laborer. Mr. Darwin's observations upon worms* are of especial interest to cultivators, but his work will be found attractive to all who care to look into the operations of nature.

Not the least interesting chapters are those devoted to the structure and habits of worms; these give experiments which some may like to repeat. They show that worms are sparingly supplied with senses. They have no eyes or ears, and can not smell, but their sense of feeling is wonderfully acute. Being without legs, they move by means of small bristles upon a portion of the many rings of the body. Though of such simple organization worms have a share of intelligence, as shown by their seizing a leaf or piece of paper by that portion which will best allow it to be dragged into the hole. The mouth is a mere slit, with a projecting lip, by which it takes hold of objects; there is a long gullet, a small crop, immediately below which is a strong gizzard; within this are often found stones, which are thought to aid in grinding food, as do those in the gizzards of fowls. Worms live upon a great variety of food, vegetable and animal, including dead worms, and they consume many dead leaves; they besides swallow earth for the sake of the nutriment it contains. The burrows run to a depth of three to eight feet, though the worms remain near the surface, except in a spell of dry, or in very cold weather. They make their burrows in part by pushing the earth aside, and partly by swallowing it. The swallowed earth, more or less changed and mixed with organic matter and the fluids of the intestines, is ejected at the mouth of the burrow, in piled up pellets, known as casts; to do this, they come up tail foremost. The amount of earth brought up from a single burrow after drying, weighs from less than an ounce to over four ounces. A square yard of earth was measured, the castings from this, when collected and dried, weighed three and a half pounds—equal to seven and a half (7.56) tons per acre per annum! In other cases 15 to 18 tons of earth per acre have been estimated, and this, if scattered equally over an acre—as it may be by rains and winds, would form a uniform coating of a little over two (2.2) inches in the course of 10 years. The examples cited of this increase of soil are numerous and full of interest, showing how the depth of vegetable mould is increased; fields where the stones almost touched one another, became so covered with soil in 30 years, that no stones were visible; large stones, partly covered, and even ruins of ancient buildings (Roman villas), buried to the depth of several feet and entirely lost sight of by the agency of worms during the present era. As to the service to the farmer and gardener, Darwin says:—

"Worms prepare the ground in an excellent manner for the growth of fibrous-rooted plants and for seedlings of all kinds. They periodically expose the mould to the air, and sift it so that no stones larger than the particles which they can swallow are left in it. They mingle the whole intimately together, like a gardener who prepares fine soil for his choicest plants. In this state it is well fitted to retain moisture and to absorb all soluble substances, as well as for the process of nitrification. The bones of dead animals, the harder parts of insects, the shells of land molluses, leaves, twigs, etc., are before long all buried beneath the numerous castings of worms, and are thus brought in a more or less decayed state within reach of the roots of plants. Worms likewise drag an infinite number of dead leaves and other parts of plants into their burrows, partly for the sake of plugging them up and partly as food."

We would gladly, did space permit, quote more from this intensely interesting work, which concludes as follows:

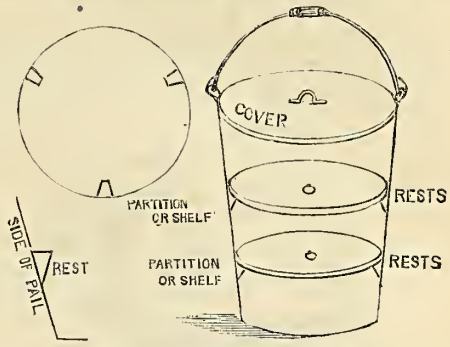
"When we behold a wide, turf-covered expanse, we should remember that its smoothness, on which so much of its beauty depends, is mainly due to all the inequalities having been slowly levelled by worms. It is a marvellous reflection that the whole of the superficial mould over any such expanse has passed, and will again pass, every few years, through the bodies of worms. The plow is one of the most ancient and most valuable of man's inventions; but long before he existed the land was in fact regularly plowed, and still continues to be thus plowed by earth worms. It may be doubted whether there are many other animals which have played so important a part in the history of the world as have these lowly organized creatures. Some other animals, however, still more lowly organized, namely corals, have done far more conspicuous work in having constructed innumerable reefs and islands in the great oceans; but these are almost confined to the tropical zones."

This work should be read by every young naturalist, if only for the examples its affords of careful, patient observation. It can especially be commended to all who live in the country, as showing them how every-day facts, apparently of little importance in themselves, if carefully noted and recorded, may lead as in this case to most interesting results.

*The formation of Vegetable Mould through the Action of Worms, with Observations on their Habits. By Charles Darwin, LL.D., F.R.S.

Butter Pails.

"Old Poultry" writes from Kalamazoo, Mich.: "We live near town, and make a business of supplying customers with fresh butter and eggs twice a week. For carrying several packages of butter, we have butter pails. They are made of the heaviest tin, divided across into three equal parts, with two partitions of tin, each having a small hole or ring in the center, for convenience in handling; and also, to prevent the butter plates from sliding against the edges of the

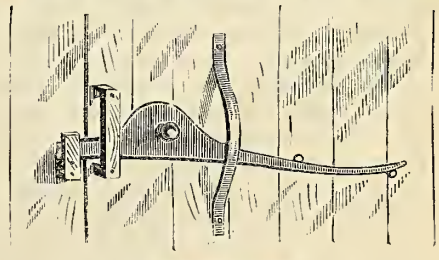


A BUTTER PAIL FOR MARKETING.

pail, make each partition bend toward the center, something of the shape of a plate. There is an ordinary cover to the pail. We have the pails made to the size of ordinary 14-quart milking pails, because that size will slide under a buggy-seat. Any good tinner can make such a pail, but be sure that the partitions and cover fit tightly, so there will be no noise when riding empty. The bottom should be made a trifle larger round than an ordinary-shaped pail. They will cost about half a dollar more than the best 14-quart pails."—[The improved pail for marketing butter, with its various parts, is shown in the engraving herewith given.—EDS.]

A Spring Latch.

Mr. Geo. O. Cook, Polk Co., Minn., describes a Spring Latch for a barn door or gate as follows: For a stable door the latch should be 18 inches long, 1/2 inch thick, and 3 inches broad at the widest part. The spring is made by the long narrow end, held in place by screws or pins. A peg in the broad



A SPRING LATCH.

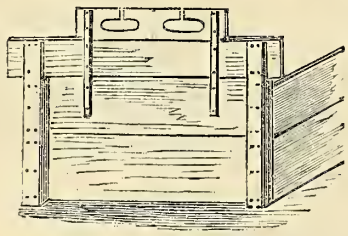
part passes through a slot in the door, and serves to lift the latch on the inside. A handle may be placed upon the outside.

The Ice Harvest.—There is one important farm crop that must be harvested in winter. Not many years ago ice upon the farm, to be used in the household economy, the dairy, etc., was considered more as a luxury than otherwise. The views as to the

importance of the ice crop for farm use have greatly changed, and now ice is a necessity, and the ice house is one of the most important farm buildings. No one can foretell just when this valuable crop will be ready to harvest, and therefore the house, tools, etc., should be in readiness for the work so soon as the ice has made. A delay of a week may result in a loss of the crop, a great inconvenience and pecuniary loss through the following summer. Be ready for the ice harvest.

A Rein Holder.

Many serious accidents occur from a neglect to properly secure the horse's reins. An engraving of a rein holder is here presented; devised by Mr. J. Meyer, La Salle Co., Ill., it is simple and evidently so convenient that it will be of profit to many of our readers. A holder for a dash-board of an ordinary wagon-box consists of a board 4 inches wide, and 20 inches long, provided with four long cleats, two opposite each other, near the ends, that pass over the dash-board, and hold the rein-board in place. Two kerfs are cut, one near the center of each half of the rein-board, with a small opening through the upper side, for the passage of the reins. The manner of using the holder is evident to all.



A HANDY REIN HOLDER.

On the Loss of Nitrogen in Purchased Manures when Applied to Crops.

BY J. B. LAWES, LL.D., F. R. S.

There is one great advantage that writers on the subject of Agriculture in the United States possess over the same class in Great Britain; they are sure to obtain an impartial hearing. In the United States a farmer, on coming across any views, or statements on the subject of agriculture that are new to him, asks himself the question, are these true; and, if so, what benefit can I derive from them? In Great Britain, from the conflicting interests of the owner of the land, and the occupier who pays an annual rent for the right to cultivate it, the teachings of science are likely to be praised or blamed accordingly as they affect the interests of the owner rather than those of the cultivator of the soil. A few years ago, when public attention was directed to the vast increase in the amount of agricultural produce sent from the States to England, there were many who put forward the view that, by a more liberal application of capital to the soil, we could grow all the wheat required to feed our population. Under these circumstances I thought it my duty to caution tenant farmers against paying too much attention to statements which were uttered by those who had no experience in either practical or scientific agriculture. I accordingly delivered a lecture before a farmers' club, in which I endeavored to show, by the teaching of my own experiments, that a higher system of farming was not so certain a remedy for falling prices as some wished them to believe.

In a letter recently published in a paper devoted to field sports, which I have been informed is much read by the owners of land, a writer, who signs himself "Agricola," makes the following observations:—"Certain pamphlets of Mr. Lawes have done intolerable mischief in giving a false coloring to the service higher farming might render in enabling British farmers to tide over the present crisis," and he goes on to say that we have the counterblasts of M. Georges Ville to send all unsubstantial utterances beyond the domain of rational consideration!

If in speaking of the immense influence which such nitrogenous manures as Ammonia, or Nitric Acid produce upon the growth of our ordinary cereal crops, I had pointed out that, owing to the high price of these substances, it was by no means certain the increase in produce would pay for their application; and consequently it would be desirable for the United States farmer to exercise some caution in their use. I think it is hardly possible to believe, that any one in the States could suppose such a caution would be productive of evil.

In another case I was rather amused at a correspondence which I lately noticed between M. Georges Ville and some one who had called his attention to my views with regard to the sources of the Nitrogen in vegetation, which were altogether antagonistic to those entertained by M. Ville. M. Ville, in his answer, stated that he had heard of the existence of a pamphlet on the subject, but that he was so much engaged in showing how Foreign Competition could be best overcome, that he had not time to look into it, but that he would do so, in order to see whether it would be necessary for him to answer it himself, or whether he should leave the task to one of his pupils.

With regard to the subject of Nitrogen, the views I am disposed to entertain may be briefly summarized as follows:—(1) That the soil and not the atmosphere is the main source of the Nitrogen which we find in our crops. (2) That in the application of manures containing Nitrogen, more or less loss of that substance is always incurred; and consequently, if the object is to obtain any given amount of Nitrogen in the produce, the application in the form of manure must be largely in excess of the amount required. In everything relating to the competition between Europe and the United States; between the vast stores of untouched fertility of the one, and the comparatively exhausted stock of the other, the question of Nitrogen is one of paramount importance. I am not aware myself of any writer, practical or scientific, who has accepted as a fact, or even entertained the idea, that in the application of Nitrogen in purchased manures a considerable loss is incurred. This loss in a substance of so costly a nature is a matter of great economic importance. The view generally held, I believe, is that no loss takes place, and further that by a small application of Nitrogen, a farmer not only recovers in the crop all that he has applied in the manure, but a good deal more. This, according to M. Ville, is the economic function of our root crops, which, when well supplied with minerals, and a small amount of Ammonia, get what more they require of this element from the atmosphere. The following are the views of this writer with regard to a rotation: "That some crops demand all the Nitrogen they require to be supplied to them; others require a small amount, which enables them to obtain a good deal in addition from the atmosphere; while others again can obtain the *whole* of the Nitrogen they need from the atmosphere." This explanation appears so simple and clear that it seems quite a pity to say anything that could throw a doubt upon its accuracy.

I will now endeavor to show what loss of the Nitrogen in the manure, has taken place in our own experiments on the growth of potatoes at Rothamsted. In order to measure the effect of Nitrogen, and also ascertain whether any, and if so what amount of loss has taken place, our plan has been to grow the crop continuously with mineral manures alone. We consider that by this means the crop avails itself of all the sources of Nitrogen at its disposal, whether they be derived from the soil or the atmosphere. When, in addition to the same minerals, Nitrogen in some soluble form is applied to the potatoes in another experiment, we consider that the increase in the crop over that grown by minerals alone, is due to the Nitrogen of the manure; and further, if we deduct the amount of Nitrogen in the crop grown by minerals alone, from the amount contained in the crop grown by minerals and Nitrogen, the residue, when compared with the amount of Nitrogen applied in the manure, will give us the measure of the loss. I must observe, however, that this experiment requires to be continued for a good many years before any safe conclusions can be drawn; first, because of the great influence of favorable, or unfavorable seasons; and secondly, because it is only by the aid of time that we can ascertain whether the Nitrogen applied, but not recovered in one crop, is available for those which succeed. The more favorable is the season for the growth of a crop, the better will the crop be able to avail itself of the stores of manure furnished by the soil and atmosphere. At Rothamsted, the season just passed was very favorable for the growth of potatoes, I therefore select this year's crop, not as indicating what might be the average loss of Nitrogen applied in manure, but to show how very serious may be the loss, even under exceptionally favorable conditions. The following table gives the number of bushels of potatoes of 50 lbs. each:

TABLE.

	Bushels per Acre.
(1) Potash, Soda, Magnesia, Superphosphate	265
(2) The same as (1) with 400 lbs. Salts of Ammonia	484
Gain by addition of Ammonia	219

It is quite evident that the mineral manures enabled the potatoes to gather up a large amount of Nitrogen; and that further growth was only arrested for want of more Nitrogen, is evident by the much larger crop grown when a manure containing that substance was used; this fact is still further confirmed by the analyses of the potatoes grown by mineral manures alone, which show a very low percentage of Nitrogen. Assuming that the ordinary potatoes in a dry state contain one per cent of Nitrogen, these potatoes contained one-sixth less than that amount, and it is probable that under such conditions no further growth was possible.

We now come to the loss of Nitrogen. The 400 lbs. of Sulphate and Muriate of Ammonia are estimated to furnish about 85 lbs. of

Nitrogen; taking the potatoes grown by mineral manures alone at 26 lbs., we find in those grown by Ammonia and minerals 66 lbs., or an increase of 40 lbs.; but as we supplied 85 lbs. in the manure, we have recovered something less than 50 per cent of the amount supplied, and this, too, under the influence of an unusually favorable season! Taking an average of seasons, it would be much nearer the truth to say that not more than one-third of the Nitrogen supplied is recovered in the crop. Potatoes contain 25 per cent of dry matter in every 100 lbs.; if we take a bushel to weigh 50 lbs., 8 bushels will weigh 400 lbs.; which amount is equivalent to 100 lbs. of dry matter, and will contain 1 lb. of Nitrogen.

To obtain this 1 lb. of Nitrogen in the produce, we find it necessary to apply 3 lbs. in the manure, and as the Nitrogen costs about 25 cents per lb., this large difference between the amount supplied and that recovered becomes a very serious consideration.

I might further observe that as our experiments are conducted with more care and attention than could possibly be given to crops grown under the ordinary operations of agriculture, I do not think it would be safe to reckon on a smaller loss than that which we have incurred, and the probability is that it might be much larger.

The general conclusion to be drawn from these experiments, as well as from those upon root crops in general, such as turnips, mangels, and sugar beet, is that they do not obtain their Nitrogen from the atmosphere; and that, when supplied with that substance, the amount recovered in the crop is very much less than that supplied in the manure.

Clearing a Field of Sod.

Mr. J. C. Nelson, Brown Co., Wis., having occasion to clear a field of its sod, proceeded in the following manner: The land was

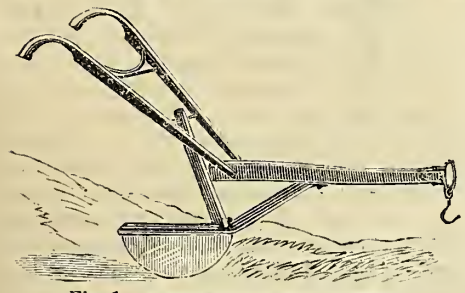


Fig. 1.—A HOME-MADE SOD CUTTER.

plowed about three inches deep, and so that the sod was cut entirely free from the ground. A sod-cutter was made from a shovel-plow, by removing the shovel, and placing a bent timber below the beam and the standard. A slot was sawed in the horizontal portion of the timber, in which an iron plate was fastened by means of bolts. The knife was made

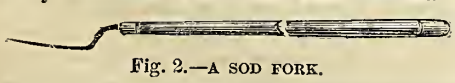


Fig. 2.—A SOD FORK.

from an old 14-inch circular saw, with the teeth cut off and the edge ground sharp. The cutter, fig. 1, was drawn by a single horse, and in a direction at right angles to the furrow slices, thus cutting the sods into square pieces of a suitable size to handle easily. A hay-fork was not adapted to this heavy pitching, and a sod-fork or hook was made for the purpose. A piece of $^3/_8$-inch cast steel, 8 inches long, was ground to a sharp point and fastened in a long wooden handle, shown in figure 2. A bend in the tine near its insertion in the handle makes the sod-fork more convenient for the workman.

A Talk with Farmers About the Weather.

BY PROF. J. W. CHICKERING, WASHINGTON, D. C.

What can be foretold about the weather? Not guessed at, but predicted on some basis of reason, with a fair degree of certainty, say three or four chances to one.

The desire and the attempt are very old. The Good Book speaks of those who, two thousand years ago, used to say at evening: "It will be fair weather, for the sky is red"; or in the morning, "It will be foul weather to-day, for the sky is red and lowering."

And ever since then have there been, as now, plenty of weather prophets on a small scale, both on the sea-coast and in the interior, sailors, farmers, and others, much in the open air, who have had considerable skill in discussing and interpreting weather indications. Within the past 33 years, first the Smithsonian Institution, and now the Signal Service Division of the Army, have taken up the business on a large scale, publishing maps and sending out "indications" for the whole country two or three times a day.

But with longer forecast, many people attach great importance to several "signs." When the squirrels and the field-mice lay up abundant stores of nuts or grain; when the fur is heavier and the feathers thicker; when the beavers and the musquashes build higher dams and thicker huts, it is by many supposed not merely to indicate that it has been a favorable season, so that corn and nuts are more plenty, and easier to gather; the beasts and birds better fed so as to be able to make better fur and feathers; the streams higher and the supply of material greater for the dam-builders, and the hut-makers, but in addition to foretell an unusually severe winter.

But alas! these signs often fail, just as the wild geese have often started north in premature warm weather, only to encounter heavy snow storms, and the ground-hog come to grief from trusting to his shadow.

So, latterly, have arisen Vennor, Tice, and others, making themselves conspicuous by predictions of what the weather will be for the next month, or even a twelvemonth ahead; sometimes contenting themselves with general prophecies of hot weather with showers in July, and cold boisterous winds with occasional snows in December, which generally prove true, unless we happen to have a cool July or a mild December; and sometimes at a venture, hazarding specific guesses of extraordinary variations, seldom coming true, and generally needing to be amended and explained after the fact. Now what are we to believe in? How much credit is to be given to these predictions, by the farmer who desires to be neither an old fogy nor a "greenhorn" who is too easily hoaxed?

With regard to any prognostications as to the weather, one year, or one month, or one week ahead, he is to pay no more attention than he does to patent medicine advertisements, or agents for patent churns. Those who have longest and most carefully studied and recorded the weather, know best, that beyond two or three days, no predictions can be made possessing the slightest reliability, or that should be taken into account in making our plans. There may be lucky guesses, as there may be woful failures in guessing.

Everybody has full liberty to guess what the weather will be at any time in the future. But when anybody undertakes to label his guesses for weeks or months ahead, "predictions," and to issue them as guides for the farmer, or the traveller, or the clothing dealer, he, in the language of Shakespeare, "writes himself down an ass." When he undertakes to get money for doing this, he shows himself a swindler on a level with other quacks.

But for one or two, or even three days ahead, the weather may be foretold, two-thirds of the time with great certainty, the other third with more or less of doubt. And not only can this be done by the trained observer at the signal station, but it may be attempted with good success by any intelligent person who has access to the daily weather maps, or even to the full daily report. It would be a great gain to the community if our daily papers would give us these reports in full as they are sent out, instead of cutting them down to the mere "indications" for their own vicinity, even if they had to lessen the space given to horse races, base ball matches, dog fights, and police courts.

The whole theory of foretelling changes in the weather, with the aid of the telegraph, is based upon the fact that our weather changes come, as a general rule, from the west and not from the east; that the great waves of barometric pressure, which we name *high* and *low*, and whose alternations produce our storms, move across our country from west to east, and almost never in the opposite direction, so that for our weather to-morrow, we look to see what it is to-day to the west of us, with very little interest as to what is going on toward the eastward. Thus in New England, a north-east snow-storm is often telegraphed as coming from the south-west, from New York, or even from Virginia, or the Carolinas, or even further South.

The pressure of the atmosphere in the temperate zone varies about one pound per square inch, and is indicated by the barometer, varying from 29 inches (low) to 31 inches (high) as the extremes, the ordinary variations being only about half as great. Now the storm-center is at or near the place of low barometer, where the pressure is least, the air from all sides rushing towards this with a rotary motion, which in very severe storms is named a *cyclone*. Sometimes, however, the areas of high and low barometer extend in long lines across the country from north to south, but moving from west to east, as in many of our "cold waves," extending sometimes from the Lakes to the Gulf. The greatest fall of rain or snow is usually a little in advance of the storm-center, while the barometer is falling. When the center has passed, the barometer begins to rise, and clearing weather may be expected, generally with north-west winds.

These storm-centers, or "areas of low barometer," or "low pressure," oftenest make their appearance a little east of the Rocky Mountains, very often in Dakota, and then move with greater or less rapidity toward the Atlantic, generally due east. Occasionally a storm-center develops in Texas, and moves north-east. More rarely cyclones make their appearance in the West Indies, and follow along the course of the Gulf Stream, the outer

edge sometimes reaching the Atlantic coast, very rarely extending inland.

Out of 100 storm-centers noted during 1879, one moved north, 3 southeast, 24 northeast, and 72 nearly due east. Their velocity varies from 20 to 40 miles per hour, so that either storm-centers or cold waves travel from the mountains to the sea in from two to five days, then passing off upon the ocean, frequently taking a north-easterly direction after reaching the coast. Sometimes a storm may be deflected from its course, or spend its force midway, or increase in severity, as it moves eastward. It is these possibilities, together with the varying velocity of the wave, which render us dependent on the telegraph for its record of daily or even hourly progress, and which sometimes contradict the best-founded predictions. But with all these possibilities of error, 80 to 90 per cent of the predictions are verified, and upon perhaps 75 per cent our reliance may be almost perfect. At times, either on land or sea, a single warning may save property to an amount greater than the whole annual expense of the bureau, to say nothing of life and comfort. Our weather then, in general terms, comes from the west, and when we read in the papers that "an area of low pressure with heavy rain and severe gales is developing in the upper Mississippi, or upper Lake region," the farmer had better not begin his haying or his harvesting, and the traveller had better not set out by way of the lakes or the ocean, until it has passed by. While if in the fall or winter, you read that "an area of high pressure with violent winds and rapidly falling temperature is prevailing" in the same regions, the farmer had better look to his young stock, and make all snug about cellar and barn, and the traveller will do well to take his heaviest overcoat.

Bearing in mind these few simple facts, every farmer or farmer's boy who has access to the daily "indications and reports," or better still to the daily weather maps, may become, to a great extent, his own weather prophet, for two or three days ahead, and thus neither be taken in by the guesses of those who make predictions to sell, nor fail of the advantage which may often be gained by a tolerably definite and reliable knowledge of what sort of weather is coming.

Ivy and Moss.—An English writer makes the following suggestion. Select a glass or earthenware dish, about one-fourth as deep as broad, and fill it with sphagnum or bog-moss. Insert around the edge of the dish, and train around and over the side some branches of Ivy; this will soon take root and grow. Hyacinths, crocuses, or other bulbs, may be placed in the moss, or small plants such as Forget-me-not, violets, etc., may be put in, and it makes an excellent receptacle for cut flowers, the Ivy forming a green setting.

American Plants at Home in England.

The engraving given below is presented for a triple purpose: in the first place, to show what exquisite drawings Mr. Alfred Parsons made to illustrate Mr. Robinson's book "The Wild Garden" (noticed in Nov. last, p. 500); secondly, to give some idea of what is meant by a Wild Garden, and thirdly, to call attention to one of our native plants, highly prized abroad, but rarely seen in a garden here. The Wild Garden, is by no means a garden run wild from neglect. To plan and stock a wild garden requires some forethought. The selection of the spot for the garden will be governed by the locality. One would not place a wild border in a trimly kept lawn; it should be in a more retired spot. Some bank or other place, where one would naturally expect to find wild flowers. The ground will be already occupied by grasses and other undesirable plants, hence it should be cleared, and as no after digging is practicable, the soil should be well dug and manured. If any large stones crop out, by no means remove them, as they may be turned to good account. The selection of plants for the wild garden may be made largely from native plants, if one would avoid expense, but those from other countries also, will allow of greater and more pleasing variety. The first requisite in a plant for a wild garden is, that it shall be perfectly hardy and able to take care of itself. Of course, such a garden will be near a path or road, and the planting should be done in reference to this, placing the tall growing plants at the rear, where they may not overtop and hide the more humble ones at the front. The planting is not to be in lines or rows, but the different kinds should be in little clumps here and there, as we find plants when growing wild. Creeping, or low spreading plants, should have a place among others, so that in time the surface of the ground may be completely covered. Before planting time is at hand we hope to give a list of some of the most easily procurable plants suitable for a wild garden.

THE GREAT WHITE TRILLIUM OR "WAKE ROBIN" (*Trillium grandiflorum*).

As to the plant shown in the engraving, it is the "Great White Trillium" (*Trillium grandiflorum*), called in some parts of the country "Wake Robin" and "Beth Root." We notice that Mr. Robinson calls it the White Wood-Lily, a name, so far as we are aware, not known in this country. Trillium is not so difficult a name that it cannot become popular, especially when it is recollected that it refers to the *triple* arrangement of the plant, its green leaves, the green parts of the flower (calyx), and the three large petals being conspicuously in triplets. The plant has a tuber-like root-stock, from which arises a stem a foot or more high, with three broad leaves, and in June, a solitary flower three or four inches across; this is at first of the purest white, but after some days changes to rose color. The plant does better with partial shade, but in a sunny border, where the soil remains moist, it succeeds with us admirably. This Trillium is found usually in rich woods, from northern New England westward to Wisconsin and southward to Pennsylvania. In some places it is very abundant; in one of the Western States we have seen it almost by the acre. The roots are offered by dealers in hardy plants.

Preparing Peach Stones.

Several have asked how to prepare peach stones for planting. They are probably aware, that when the stones are kept dry all winter and then planted in spring, very few, if any, will germinate. In nurseries, the stones are not allowed to get very dry, but they are stratified or bedded just before winter sets in. The usual manner is, to mark out the limits of the bed and spread the stones over it to the depth of two or three inches; the stones are then spaded in as if turning under a dressing of manure. By this operation they are distributed through and well mixed with the soil, where they are left to freeze and thaw all winter. This treatment causes the halves of the stone to separate and the pressure within of the swelling seed can push them apart. This may be effected by other methods than that of spading in. The stones are sometimes spread upon she ground and covered with spent tan-bark or sawdust to the depth of three to five inches, and thus exposed to the weather. In spring, when the ground is ready to plant, the stones that have been spaded in are separated by throwing the soil of the bed upon a riddle, such as is used by masons; the earth falls through while the stones are left upon the riddle. Those that have been under tan or sawdust are more easily recovered at planting time. It is to be assumed that those who at this time ask what is to be done "to prepare peach stones

for planting," have as yet done nothing with them, and that they are still dry. Such should at once be mixed with sand, or sandy earth, in a box, and placed where they will be exposed to all the changes of the weather. This will place them in a condition similar to those that have been spaded in, but having been dried for some months it is likely that a share of them will remain unaltered, and that in spring the halves will remain firmly together. Such stones must be carefully cracked, holding them between the thumb and finger upon a block and striking the edge with a hammer; the kernels being thus removed, are to be mixed with earth or damp moss, and kept in a warm place until they germinate. The stones that have been bedded or otherwise exposed to the action of frost, and are still unchanged, are not planted with the others, but are separated from those that have begun to germinate, and cracked before they are planted.

THE BUTCHER'S BROOM (*Ruscus aculeatus*).

The Butcher's Broom.

Every now and then there is sent to us for a name a shrub so unlike other shrubs in its manner of flowering, that it is not strange that it should excite curiosity. In this shrub the small flowers apparently grow from the middle of the leaves. The shrub is *Ruscus aculeatus:* it is a native of Europe and Asia, occurs sparingly in England. It is a much branched evergreen, growing about two feet high, with very tough stems; what appear to be leaves are not truly such, but are really flattened short branches, similar in nature to what pass for leaves in the popular so-called Smilax (*Myrsiphillum*) and in the Asparagus; the true leaves are mere scales, so small as not to be noticed. When we know that they are really branches, and not leaves, the fact that flowers are produced from them is not so strange. The little flowers are 6-parted and greenish white, and are succeeded by a berry about half an inch in diameter; this being bright red, the bush, when in fruit, is very showy. In this country it is cultivated as a house plant; in England it is valued as being one of the few plants that will flourish beneath the shade and drip of trees. It is readily multiplied by division, as it produces a number of suckers. The origin of the name *Ruscus* is not known; it gets its common name from the fact that its twiggy stems answer as a material for making coarse brooms. The plant belongs to that section of the Lily Family which includes asparagus, and like that plant its young stems are used as food. It has some medicinal reputation.

Fertilizers for House Plants.—When plants are in a growing state they may be stimulated by the use of guano water. A small teacupful of Peruvian guano dissolved in a pailful of rain water is strong enough; water the soil with this once, or at most twice a week. The Water of Ammonia (Hartshorn) of the shops is about as good, and can be had everywhere. If of ordinary strength add a fourth of an ounce (two teaspoonfuls), to a gallon of water, and use as above stated.

The Chili Pine.—Araucaria.

There are some trees of which the northern limit is exceedingly difficult to fix. It is easy to say that a given tree will grow in Virginia, and that it will not be hardy in Massachusetts; but there is a wide belt between the two, in parts of which the tree may succeed, while in others it will fail, and the northern limit, instead of being a straight line drawn east and west, will, from local causes, be a very irregular one. Among the trees of which it is difficult to fix the exact northern limit is the Chili Pine (*Araucaria imbricata*), a tree so desirable to have, where it can be grown, that this uncertainty is all the more to be regretted. There are seven described species of *Araucaria*, so-called because the first discovered, the one under notice, was found in the province of Arauco, in Chili, where it forms extensive forests and grows from 100 to 150 feet high. The tree is remarkably formal, having the shape of a regular cone; its branches are placed in distinct whorls, the lower declining to the ground, those above extending horizontally, while the upper branches often curve upwards in a candelabra-like manner. The leaves, from an inch to an inch and a half long and an inch wide in the broadest part, terminate in a sharp point; they are placed closely upon the branches and overlap one another in such a manner as to suggest the specific name, *imbricata*, a term which means "overlapping like the shingles on a roof." The leaves are thick and rigid, and as they last for fifteen years or more, the

Fig. 1.—THE CHILI PINE (*Araucaria imbricata*).

bark of the branches is concealed by them, and even the trunk is for a long time clothed by the persistent leaves. Generally, though not invariably, the staminate and pistillate, or fertile flowers are borne upon different trees, in catkins at the extremities of the branches. The former fall away after shedding their pollen, but the others increase in size to form a cone, which is ripe at the end of the second year. The cone is nearly globular, about eight inches in diameter, each scale having a large seed about two inches long. These seeds, of which there are about two hundred in a cone, form a large share of the food of the Araucanos Indians, who eat them raw and cooked, and prepare from them a kind of flour. The wood of the tree is hard and heavy, yellowish, and handsomely veined. The tree yields a resin which, in Chili, is used medicinally. The Chili Pine was introduced into England by the botanist Menzies, in 1795; one of the trees he brought home was planted at Kew, where we saw it in 1880, the oldest specimen in cultivation. The tree being so completely clothed with foliage, has a strikingly massive effect, and the regular disposition of its branches give it a formal aspect quite unlike that of any other. In England it is much planted singly, and in avenues; the climate of the Island of Jersey is very favorable for it, and almost every place of any pretension has one or more "Monkey Puzzlers" upon the lawn. This name, which seems as if given the tree by a sailor, is descriptive if not elegant, as it would puzzle almost any animal to climb its trunk and branches, thickly covered with prickly leaves. Mr. Josiah Hoopes, in his excellent "Book of Evergreens," states that the tree is not hardy with him in Westchester Co., Pa. It was formerly said to be hardy in Washington, but Mr. Wm. Saunders informs us that this is not the case, and he doubts if it can be relied upon anywhere north of the Potomac. It is probable that south of Washington it may be planted with success, and our friends in southern localities who try it should be careful to give it a well drained spot. A specimen in a sheltered garden about 10 miles north of New York City, was watched by us with interest for several years. One spring we found that the tree was gone—but the owner had moved and taken it with him. So striking a tree is worth the trouble of growing a small specimen in a tub or box, to be put out in summer and removed under shelter in winter. The engraving, fig. 1, shows a young tree. In the older trees the branches become much subdivided, and the whole presents a dense mass of green. The form of the leaves, and the manner in which they cover the branches, is shown in figure 2. Some of the other species are remarkable for their beauty of habit and feathery foliage, and are often used in the decoration of conservatories. Perhaps the finest of these is the Norfolk Island Pine, *Araucaria excelsa*, which in its native country, an island in the Pacific, reaches 200 to 225 feet in hight, and 11 feet in diameter at the base of the tree. Its wood is remarkably heavy.

Fig. 2.—SMALL BRANCH OF THE CHILI PINE.

Japan and Other Lillies.

If asked how an ardent admirer of flowers could procure the greatest amount of satisfaction for the least outlay of money, we should say, expend a good share of the sum appropriated in Lilies. One need not have a very long memory to recall the time when the Tiger Lily, the Turk's Cap, and the old White Lily made up the catalogue of those in general cultivation. The opening of commerce with Japan was followed by a wonderful improvement in our gardens, especially in the beauty and variety of Lilies that came to to us from that country. Of course we have fine Lilies from other countries, but it was those from Japan that first made a marked sensation among flower growers, and gave a strong impulse to Lily-culture. The first of these, and still called the Japan Lily, was *Lilium speciosum*, (sometimes, incorrectly, *L. lancifolium*), which was for some years treated as a greenhouse plant, and the price at first paid for a single bulb, will now purchase hundreds. Japan furnished us with three varieties of this species, a white, a rose-colored, and one with dark-red spots. Since then several others have been produced from seed, notably "Melpomene," and one or two others raised by C. M. Hovey, which in richnesss of coloring far exceed the originals. One of the most beautiful of all the varieties of this Lily is that called *præcox*. This bears its flowers on very long stalks, and strong bulbs produce a dozen or more; they are smaller than in the other varieties, and more regular in form. The engraving, much reduced in size, gives the form and habit of this beautiful variety. The flowers are pure white, except occasionally a tinge of pink near the ends of the petals. The warty projections—or fringe, as florists term it—near the base of the petals, are unusually numerous and prominent, and add greatly to the beauty of the flower. This variety is quite as hardy as the others, and would be more generally cultivated were it better known. The florists have found out its superiority, and its flowers are in demand for decorative work. By the way, the florists have a trick in working with Lilies, which it is well for others to know. The anthers in Lilies are very large, and produce a great deal of pollen, which, when the flowers are disturbed by handling, falls upon and soils the petals, often in an unsightly manner. Those who supply florists with these flowers, first pick off the anthers, to prevent this trouble. The propagation of this and other varieties of *L. speciosum*, as well as of most other species of Lily, is very easy;

THE JAPAN LILY (*Lilium speciosum*, var. *Præcox*).

the scales of the bulbs being the part employed. Those who are curious in such matters will find it very interesting to make the experiment. A half a dozen or more of the outer scales of a bulb may be carefully broken off without any injury to the plant. Dry some peat-moss (*Sphagnum*), and rub it fine between the hands, and then having made it moist, not wet, place the scales in it, in a flower-pot or other vessel, and keep in a warm place where the temperature is about 60°; light is not required. Keep the moss properly damp, and in two or three months a little bulb, sometimes more than one, will appear at the base of each scale, as shown in figure 2. When roots appear, these scales may be placed in a pot of good soil, which may be plunged in some convenient part of the garden; if started this month, the bulblets will grow to the size of a hickory nut by fall, and in one or two years be large enough to bloom. Besides the several varieties of *L. speciosum*, the Long-leaved (*L. longifolium*), the Golden-banded (*L. auratum*), the Slender-leaved (*L. tenifolium*), and many other Lilies are to be found in the catalogues of the various dealers.

Fig. 2.

Notes from the Pines.

It was one autumn during the grape fever of some 15 years ago or more; some point of grape culture was under discussion, and I remarked that I would make a note of it and write of it at planting time. An experienced editor said: "The time to talk about grapes, and to say anything about their cultivation, is when grapes are ripe and every one is eating them." I think he was right, and I might add, the time to write upon any subject is when it presents itself to the mind. If the hint given is of value, it will be remembered; if not, it makes but little difference when it is given. These days before Christmas, the

"Everlasting Flowers"

are brought to mind. As I go to the city, I see them on every hand. I may say here, that any one within easy reach of New York, and fails to visit the city in the fortnight preceding Christmas, misses a great sight. I do not refer to the show made by the stores, which is of itself worth seeing, but the provision made for Christmas in the way of evergreens and decorations for the great holiday. The dealers in these wares have heretofore taken up so much of the sidewalks, that in the holiday season just past, a long line of booths was erected in the middle of the widest street near Washington Market, for dealers in such wares. Christmas trees form the bulk of the stock, and these range from the little 10-cent tree two or three feet high for the small family, up to those of 20 feet for Sunday Schools and Churches. These trees are largely the native spruces, hemlock and cedar, but the finest are the Norway spruce. Of this tree the overgrown stock of the nurseries is sold at a far better price than if provided with roots. But to return to our everlasting flowers. Besides the Christmas trees and wreaths there are quantities of

Decorative Designs.

Crosses, stars, squares, and triangles, and, of all strange shapes, enormous hearts, are offered. These decorations come by the sloop-load from New Jersey and elsewhere, and are in wonderful variety. The straight and angular kinds are made upon shapes of lath, while those with curved outline have a frame of willow or other flexible stems. These forms are covered by green foliage of various kinds, and often enlivened by clusters of red berries. Some of the commoner kinds have flowers of bright colored tissue paper, and we occasionally meet with a lot of higher character, where the green is made lively by the use of some kinds of "everlasting flowers." If one goes up town, among the city florists, he will see, at holiday time, tasteful wreaths and other forms made of these "everlasting flowers," with perhaps just a little green. Even mottoes are offered, in which letters of white flowers upon a groundwork of colored ones wish "A Merry Christmas." I have no doubt that others besides myself, in seeing the effective use made of these flowers, have regretted that they did not raise a quantity of

The Easily Grown Annuals,

for all those in common use are annuals. Now, while the matter is in mind, is the time to prepare for an abundant supply of these flowers to use next Christmas. The great majority of everlasting flowers belong to the Sun-flower Family (the *Compositæ*), and have stiff, papery florets, which in drying retain their form and color. The French call such flowers *Immortelles*. The little globular heads, so much used by the French to make wreaths to place upon graves, are from a plant closely related to our "Life Everlasting"; it is a perennial, and not hardy with us.

The Seedsmen's Catalogues

are generally so full that I need only enumerate the most desirable kinds, referring to the catalogues for descriptions. *Acroclinium roseum;* this is from Australia; it has rays of a most delicate pink, and in its variety, *A. album*, they are pure white. This and the *Rhodanthe* are the most delicate of all flowers of this class. *Ammobium alatum*, has small, white globular heads. Of *Helichrysum*, from Australia, there are a dozen or more species and varieties, including white, yellows, various reds, and very dark crimson. These are among the most showy and generally useful of all the Everlastings, as the flowers are the largest, and they give a wide range of bright colors.

For the Best Success

with these Everlastings, they should be sown early, as they are slow at first, and are usually caught by the frost when they are just in their prime. Sow the seeds in a frame or in window boxes in order to give them a long season, and put the plants in the open ground when the weather is settled. Another point is very important to observe. If intended for winter decoration, the flowers should be gathered just as they are about to open; cut with stems as long as possible, tie in small bunches, and hang, heads downwards, in a dark room to dry. The annual known as the Globe Amaranth, belonging to a different family, has flowers in small spherical heads which are white, yellow, and various shades of purple. If cut early it keeps well. It is a trick of dealers in "everlastings," to change or highten their colors by dipping them in dilute Nitric Acid (one part of the acid to 10 or 12 of water) in a glass vessel; the dried flowers are immersed in this dilute acid for about a minute, shaken to remove any excess of the liquid, and hung up to dry.

What is an Apple?

Probably the briefest answer to the above question would be: "The fruit of the apple tree." This would perhaps suggest another: "What is a fruit?" to which a brief and direct answer would be more difficult, as fruits present themselves in a great variety of forms. In many cases the fruit may be described as the ripened pistil, but that would not include all those products that are commonly regarded as fruits. "The part of

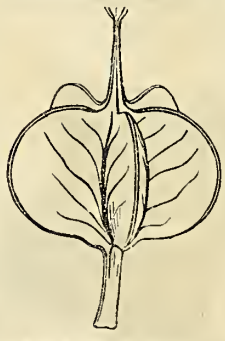


Fig. 1.—THE CORE.

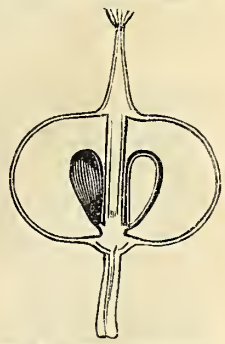


Fig. 2.—CORE CUT OPEN.

the plant which contains the seeds" is perhaps as concise and accurate a definition as can be given. This does not state the exact nature of the part; in the apple and pear the part which we value and eat as the fruit is in reality the enlarged and fleshy end of the stem, while the true fruit, the ripened pistils, form but a small part of the whole, and which, in eating the apple or pear, we reject as the core. Very few ever notice the proper fruit of the apple, and fewer still ever see it. By carefully removing the pulp from a thoroughly baked apple we may separate the core, or the real fruit, a five-lobed body, as in figure 1 (from Gardener's Chronicle), which is composed of a very tough cartilaginous substance, within which are the seeds, as in figure 2. The five-lobed character of this may be seen when the apple is cut directly across, as in figure 3. All this pulpy mass that surrounds the star-shaped center is the end of the stem of the apple, which becomes large and fleshy and in time becomes edible. In the pear, the fleshy portion is more readily seen to be the swollen end of the stem, as that has not the deep depression where the stem joins the fruit that is found in the apple. Those who are not accumtomed to trace the curious changes to which the different parts of plants

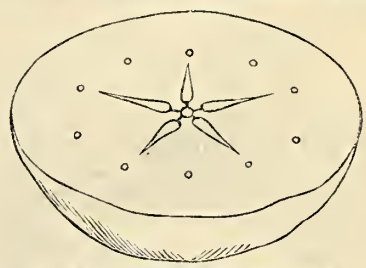


Fig. 3.—CROSS-SECTION OF APPLE.

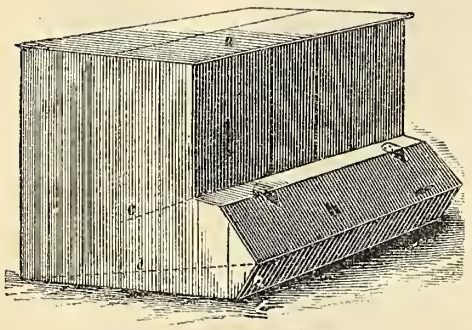
are subject, may find it difficult to see in the rich edible apple or pear the enlarged end of a stalk. If such could see the Cashew Nut of the West Indies, they would be readily convinced. In that the end of the stem is enlarged, to form a pulpy pear-shaped fruit, within which there is no core or seeds, the real fruit, which is an edible nut, being borne at the end and quite outside of it.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Coal Bin.

Mr. Edward Dambach, Butler Co., Pa., sends a sketch of a very convenient coal bin which he has used to his satisfaction for some time. The coal is put in at the top of the bin, *a*, and is removed through a lid in the side. The coal is kept from pressing against this lid by means of a board in the position shown by the dotted line, *c*, in the engraving. The bottom of the bin, *d*, is slanting, the upper and front sides of which come even with the lower edge of the lid. The box can be

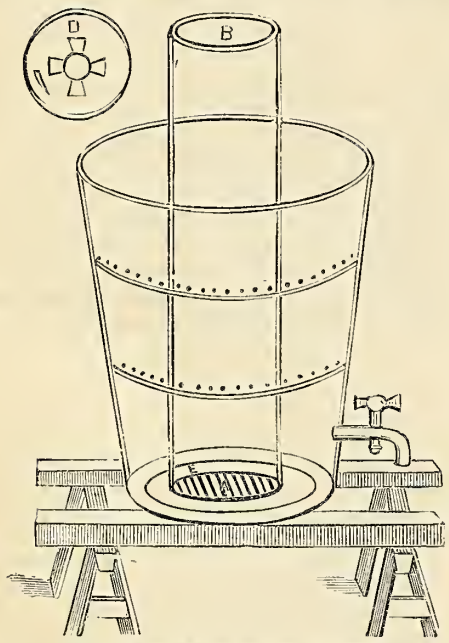


A HANDY COAL BIN.

made either plain or ornamented, and if the latter, it is far superior in its appearance to the unsightly coal 'scows' frequently seen.

Heating Water—A Japan Bath.

A correspondent, in writing from near Lucknow, in the East Indies, sends a sketch of what is in common use there as a Japan Bath, though it is employed to heat water for many purposes besides bathing. He thinks that such an affair would be much used in this country if it were generally known how quickly and cheaply water can be heated in



A JAPAN BATH OR WATER HEATER.

it. The reservoir used is a half-barrel, large firkin, or some such affair. In the center is a cylinder of sheet iron, *B*, which fits over a hole in the bottom of the vessel; it has a flange, *E*, at the bottom, by means of which it is fastened to the bottom of the barrel, by rivets, with red-lead between the two to make a close joint; there is a grate, *A*, at the bottom of the cylinder, to hold the charcoal, At the top is a cover, *D*, with openings that may be closed more or less, and serve as a damper. A faucet near the bottom completes the heater. It should be set upon two horses or other supports, placed far enough apart to clear the grate and allow the coals that may drop from it to fall to the ground. Our correspondent states that, properly managed, two lbs. of charcoal is enough fuel for a day.

Water of Ammonia, or Spirits of Hartshorn.

A few months ago we suggested that house-keepers should keep a bottle of Lime-Water at hand, and mentioned some of its uses. Another alkaline solution, the Water of Ammonia, is also of great utility in the household. This is a solution of the gas Ammonia in water. Ammonia is formed when animal matters are distilled in a certain manner; the early chemists produced it from the horns of the deer or hart, and as they regarded everything that was distilled as a "spirit," they called this Spirits of Hartshorn. The gas, Ammonia, is invisible, but we can readily recognize it by its strong and pungent odor. One of its peculiarities is, the readiness with which it dissolves in water. At ordinary temperatures water will dissolve over 600 times its own bulk of the gas. The liquid sold by the druggists as Spirits of Hartshorn, is merely a solution of this *gas in water*, hence the more accurate name for it is Water of Ammonia. Two kinds are kept in the shops, one three times as strong as the other. If simply Water of Ammonia is asked for, the weaker kind is given; to procure the other the "strong" must be designated. To keep it, the bottle must be closed by a well fitting glass stopper which is waxed, or by a rubber one, as it soon destroys a cork. When applied to the skin, Ammonia is a powerful stimulant, and the strong solution will blister very promptly. It is usually applied externally in the form of a liniment. If one part of ordinary Water of Ammonia be mixed with two parts of Olive Oil, they form a liquid soap which is known as Volatile Liniment, and used wherever the stimulant action of ammonia is needed, especially in the sore throats of children.

Being strongly alkaline, it is useful to neutralize acids, and when strong acids are spilled upon clothing or other fabrics, an immediate application of Ammonia may arrest their destructive action. When black fabrics are discolored by most acids, Ammonia will restore the color. The readiness with which it combines with oil and grease of all kinds makes it most serviceable in removing such articles from the clothing. Applied to a grease spot, it forms at once a soap with the oil or fat, which may then be washed out. Unless the application be followed by washing with water, it will do little or no good. A mixture of equal parts of Water of Ammonia and Alcohol forms one of the best liquids for cleaning woollen clothing, there being few spots or stains which water will not remove, that will not be dissolved by the Ammonia or the Alcohol. In using this, apply it well to the spot, and then wash the place with a sponge and warm water. There is no way in which hair-brushes and combs, especially fine ones, can be kept in good order so easily, as by an occasional washing in water (blood warm), to which enough Water of Ammonia has been added to make it smell rather strongly. A washing in this at once cleanses a soiled hair brush and makes it look as bright and as good as new.

A Chimney Sweeper.

"W. W. W.," Cape Girardeau Co., Ill., sends a sketch of a device for removing soot from a chimney. It consists of a bundle of flax straw large enough to fill the flue, to which a rope is attached in its middle, each half being long enough to reach through the chimney. If the rope cannot be dropped readily from the top, attach a weight of some kind to it to carry one end of the rope through the chimney. The sweeper is operated by two persons, one at the top and the other at the bottom, one pulling up and the other down. The illustration herewith given shows the arrangement of the flax, weight, and the rope.

Variety from Potatoes.

Owing to the long and severe drouth over a wide extent of country, many families will find their usual variety of winter vegetables much curtailed, if they are not reduced to the potato as the only vegetable. Probably no other vegetable can be prepared in so great a variety of acceptable styles, and we remind our friends of a few of the least common ones.

KENTUCKY, OR FRICASSEED POTATOES.—Peel the potatoes and slice very thin, as for frying, and allow them to remain in cold water for half an hour. Place in a pudding dish, adding salt, pepper, and milk; put in the oven and bake for an hour. When taken out, cut a lump of butter half as big as a hen's egg into small bits and scatter them over the top just before serving. We find that some potatoes need longer baking, two hours not being too much. The quantity of milk should be sufficient to leave a little rich gravy to moisten the potatoes; half a pint to a dish of moderate size will usually be enough, but this can be learned by experience. If this is once tried it will be liked, and it will be very sure to be repeated.

BROILED POTATOES.—One of the ways of making a breakfast dish of cold potatoes, is to slice about half an inch thick, place in a wire gridiron, and broil them, browning both sides equally. As they are removed, sprinkle each slice with salt and pepper, and place on it a bit of butter, and serve hot.

POTATO BALLS.—Use mashed potatoes left from the dinner, or mash them for the purpose; add the yolk of an egg, and make into flattened cakes. Dip these in egg and cracker crumbs, and fry, or place upon a greased griddle and brown evenly on both sides.

POTATO SALAD.—Slice cold boiled potatoes very thin, place in a dish, strewing among them pepper and salt, and a little onion and parsley chopped fine; add vinegar enough to

slightly moisten. This is excellent with cold meats. Those who like oil will find it a great improvement to add it. Make the salad an hour or two before it is to be eaten.

Recent Household Appliances.

Partly for the pleasure it affords, and partly that we may keep our readers advised as to such matters, we now and then make a tour of inspection among the house-furnishing stores. In such establishments we find a vast number of appliances for aiding the housekeeper in her work, some of them of great utility, while many are mere toys. It is interesting to see the number of contrivances for performing a simple operation. Nothing can be simpler than the grating of a nutmeg, yet we several years ago illustrated half a dozen or more machines for doing it. So with beating eggs; the number of egg-beaters is still larger, and some of them, the simplest, are very useful. A short while ago we visited our former neighbors, Messrs. Baldwin & Co., Murray street, for novelties. Among other things there were what are called

"Egg Shirrer."—"Shirred" is apparently a recent name given to the manner of cooking eggs, for which this dish is intended. The affair is a vessel shaped like a shallow skillet,

Fig. 1.—Egg coddler.

of about the capacity of a coffee cup; it is made of earthenware with a white, porcelain-like lining, and is made very thick, figure 1, so that it may retain heat. The dish is placed upon the stove until well heated, a bit of butter is put into it, and when this is melted an egg is broken and its contents dropped into it. If the egg is to be but slightly done, the shirrer will retain heat enough to cook it, and it may at once be taken to the table. If it is desired to cook more, then the dish may remain upon the stove a while longer. A dish is served to each person, who can thus have the egg cooked according to his individual fancy. In boiling eggs, it is not always easy to get the exact "three minutes" by the kitchen clock. Hence various

Egg Timers have been devised; these are small "hour glasses" which run but three minutes; they must be watched, that the eggs may be removed as soon as the sand runs out. When one stands and waits, three minutes seems a long time—quite too long to waste in the hurry of getting breakfast. We saw at the place referred to a Signal Egg-timer. In this the sand-glass is suspended in a frame, as shown in figure 2; it is so contrived that when sufficient sand has run into the lower part of the glass, its weight turns the glass, and the hammer, shown at the top, falls down and strikes the bell below, thus informing the cook that the time is up. Below is a wedge-shaped counterpoise; by moving this, the alarm will be given at the end of two, three, or four minutes.

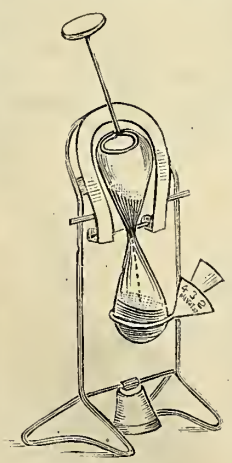


Fig. 2.—Egg timer.

Hot Water Plates, which were formerly cumbrous and troublesome affairs are now very neat and simple. A deep "crockery" plate, fig, 3, is furnished with a metallic bottom, leaving an inch of space between the two; this space is to be filled with hot water through an opening which is provided with a tight-fitting screw cap or plug. Lovers of hot buckwheat cakes will approve of these plates, which are also useful for keeping mut-

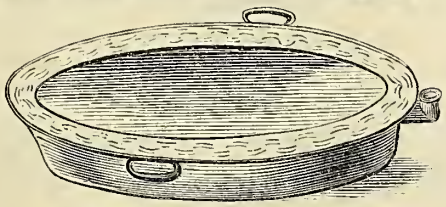


Fig. 3.—Hot water plate.

ton chops and other breakfast meats hot, that are not well relished when half cold.

A Potato Slicer is shown in figure 4. An iron disk, with four knives set to cut at the right thickness, is made to revolve by turning a handle. The potato is placed upon a shelf or ledge, and by means of a sliding guard is pushed against the knives. The affair is fastened to the kitchen table, and by

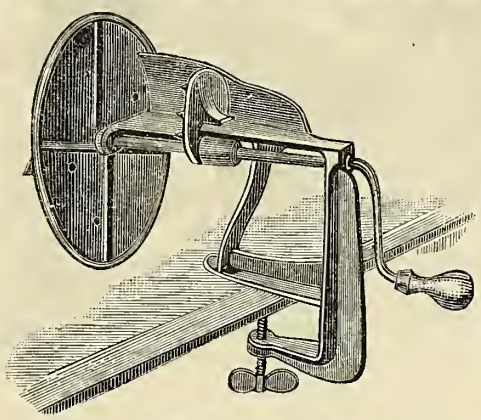


Fig. 4.—Potato slicer.

turning the crank with one hand and pushing the sliding guard with the other, the potato falls in slices, all of the same thickness, with a rapidity most amusing to witness. This is a really sensible and useful contrivance. very simple, as most good things are.

Corn Bread and Cakes.

[The statement in the December *American Agriculturist*, that nutriment furnished by potatoes costs four to five times as much as it does from corn meal, and that, on the average, nourishment obtained from wheat flour is two or three times as expensive as that from corn, has led to a wide demand among our readers for further directions for using corn. We can best respond by giving several good recipes, from among which each reader can select one or more that will be desirable.]

Corn Bread.

A.—Mix well with *two* quarts of fresh ground corn meal, 3 pints warm water, 1 tablespoonful sugar, 1 teaspoonful salt, and a large tablespoonful of hop or brewers' yeast. Set in a warm place about five hours, until it rises well. Then add about three-quarters of a pint of wheat flour, and half a pint of warm water, and let stand to rise again about an hour and a half. Pour into a pan well greased with lard, or butter; let it stand to rise a few minutes, and bake in a moderately hot oven nearly an hour and a half. It is good hot or cold, but best while hot. Corn bread made essentially after this recipe carried off the prize among a hundred exhibitors, on the score of *quality* and *economy*.

B.—Into one pound corn meal rub half teaspoonful salt and one of soda, a tablespoonful of lard or butter, and mix with one beaten egg and 3 cups (1¼ pint) of sour milk. Bake 40 to 50 minutes in a buttered pan. It is very good thus: some will prefer the addition of a little sugar or molasses.

C.—Scald two quarts sifted corn meal; add cold water enough to leave it lukewarm. Add a little salt, one-third teacupful rye or wheat flour, and stir all together with half a teacupful of yeast. Let it stand overnight, and in the morning add half teacupful molasses and a teaspoonful cooking soda. Bake in a pan two hours. We have eaten exeellent bread made in this way.

D.—A good boiled corn bread is made thus: Mix 5 pints corn meal, 1 pint rye or wheat flour, 2 teaspoonfuls salt, a teacupful of molasses (less if preferred), and about 3 pints of milk or water, or part of each, or enough to form a soft batter. Put in a tin kettle with closely fitting cover, set it over a kettle of hot water and keep it boiling through the day. A tin mold with a hollow opening in the center is the best. If left over warm water overnight it supplies a very nice warm loaf for breakfast.

E.—A good, cheap, quickly made corn bread: Mix 3 large cups of corn meal with one of wheat flour, a cup of sour milk, 2 tablespoonfuls of molasses, and enough soda to remove acidity, and a little salt. Add enough sweet milk (or water may do), to make it as soft as you would for soft gingerbread. Mix well and bake 50 to 60 minutes.

F.—An Apple Indian Loaf: Scald 3 pints corn meal with 1½ pint boiling water, and thin immediately with 3 pints of tepid water. Add 4 teacupfuls of Graham flour (or other flour may do), 3 or 4 cupfuls of finely chopped sweet apples, a gill of molasses, and a little salt. Bake 6 to 8 hours in a hot oven. The apples may be omitted. This gives a *moist* loaf relished by many people.

G.—Pumpkin Loaf. With a strong spoon stir well together 4 pints of corn meal and about 3 pints of stewed pumpkin while scalding hot. When cold, add a teaspoonful of milk, a cup of hot yeast, half cup molasses, a teaspoonful salt, and about 1½ cup wheat flour. Mix all well in a deep baking pan (iron preferable). When light, bake 3 hours at a moderate heat. May be left over night in a moderately warm oven for a warm breakfast.

Corn Cake.

H.—Indian Pound Cake: 2 cups corn meal, ¾ cup wheat flour, 2 cups sugar, 4 or 5 eggs, ½ to 1 cup shortening, seasoning with nutmeg and cinnamon, or as desired. Bake 40 to 50 minutes.

I.—We have tested a good corn cake made thus: 2 pints meal, 1 pint each of sweet and sour milk, 1 tablespoonful shortening, and 2 or 3 of molasses, 1 teaspoonful of soda, 1 of salt; beat all well together and bake in quick oven 80 or 90 minutes.

K.—We have also tested a very good Corn Sweet Cake, described thus: 3 cups meal, 2 cups wheat flour, 1 cup sour milk, 1 teaspoon soda, half nutmeg, 5 eggs, whites beaten separately; 1 cup butter and 2 cups sugar rubbed well together. Mix all well and bake until done through.

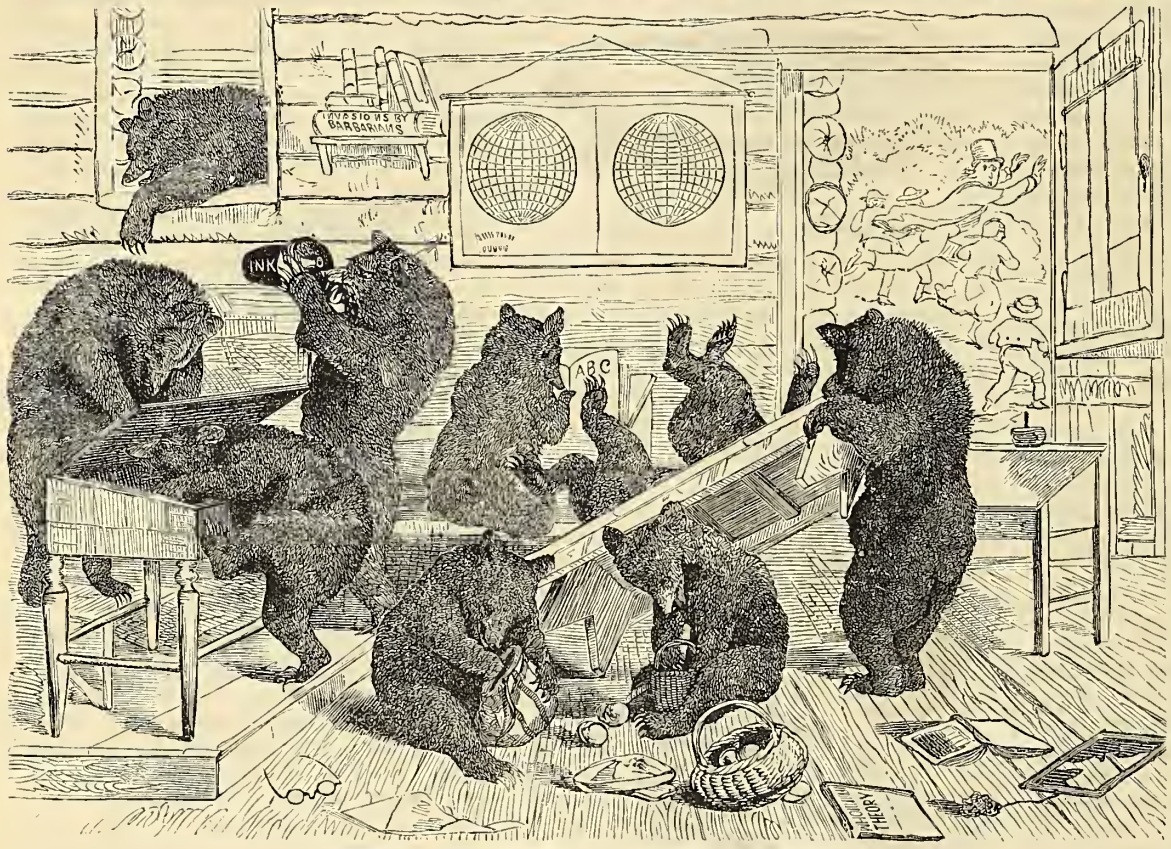
L.—Molasses Corn Cake: 2 cups meal, 1 cup flour, 2 cups molasses, 1 cup sweet milk, 1 egg, 1 teaspoonful salt, 1 of soda and 2 of cream of tartar, butter size of an egg. Bake 2 hours.

Pies that Stew Over.—Every housekeeper knows the trouble that comes from the overflow of the contents of pies in baking. Not only is the exterior of the pie soiled, but the juice that falls upon the hot floor of the oven is burned, and gives the pie crust an unpleasant, smoky flavor. This trouble may be completely prevented by taking a strip of cotton cloth, all the better if somewhat worn, about an inch and a half wide, and long enough to go around the pie. This strip being wet, it is put around the edge of the pie, half of its width to lap upon the crust, and the other half upon the plate. This is done before the pie goes into the oven, and the strip may be removed when it is taken out, or left on until the pie goes to the table.

BOYS & GIRLS' COLUMNS

Bears in the School-Room.

"I don't believe it," some matter-of-fact youngster will say. I don't believe that bears ever entered a school-house and acted in the manner shown in the picture."—Well, neither do we. There are some artists who have a special talent for representing animals in the act of doing the things which are done by men and women. The



A GROUP OF MERRY BEARS IN A COUNTRY SCHOOL HOUSE

artist who drew the picture did not try to show what he had seen done by bears, but what he imagined that bears, finding themselves in a country schoolhouse, might do, if they had a chance. In this picture the bears appear to have come while the school was in session; it is no wonder that the teacher and children, astonished at the visit of such an "examining committee," at once took to flight. What would bears do in such a case? Of course the lunch baskets of the children would be the chief attraction, and they are properly shown as studying the contents of these, as they are more attractive than the contents of the books. One old fellow is evidently occupied with the ink-bottle; don't you hope his curiosity may tempt him to swallow its contents? The spirit of mischief which young bears, like other youngsters possess, is shown by their overturning the bench upon which some of their companions have seated themselves. The old fellow has taken the teacher's desk, but he does not seem to understand that it is the business of the teacher to keep order. The two young bears engaged in examining the lunch baskets appear to be having the best of the fun. While this gives the artist's idea of what bears might do in a school house, is it not altogether too nearly a representation of what some wild youngsters actually do when the schoolmaster is away, and they have the room all to themselves? We think we can recollect some unruly doings in a school-house, and they were not by four-legged furry animals.

Where Our Copper Comes From.—The new Census Report states that during the census year 50,655,140 lbs. of copper were taken from 32 mines in this country, valued at $8,842,911, or about 17½ cents per lb. Of this total, nearly nine-tenths (45,830,262 lbs.) came from Michigan, and nearly four-fifths of the whole (40,389,212 lbs.) came from the single county of Houghton in the north-western part of Michigan, mainly from one mine, the Calumet and Hecla. Vermont's 1 mine yielded 2,647,894 lbs.; North Carolina's 3 mines, 1,640,000 lbs.; Missouri, 3 mines, 230,717 lbs.; Maryland, 1 mine, 164,640 lbs.; Maine, 3 mines, 83,080 lbs.; Pennsylvania, 1 mine, 40,460 lbs.; Wisconsin, 1 mine, 18,087 lbs., leaving but 3,850 lbs. for all the other localities. The total wages paid was $2,915,103, of which $1,971,451 went to Houghton Co., Mich. The above is from the eastern section. The western section is estimated to produce about one-eighth as much more, or about 6 million pounds. A solid or cubic foot of water weighs 62½ lbs., and the specific gravity of bar or ingot copper being about 8.9, a solid foot of copper weighs about 556 lbs., or a quarter of a ton.

The Doctor's Talks.

While I like to have my young friends ask questions, I do not care to have so many all at once, as "H. D. B." sends—still, it is better to have many than none. One of his questions is seasonable: "If water, like other things, contracts with cold,

Why Does not Ice Sink?"

If my young friend can find a cast-away bottle, or one that is not wanted for any other purpose, he can make an experiment that will help him answer his question. Fill the bottle quite up to the rim of the neck with water, and place it out-doors in cold weather. It is better to do this in the evening, and in the morning you can examine the bottle—or what may be left of it. It may be, though not very likely, if the bottle is a very stout one and the freezing takes place slowly, you will find it unbroken, with a plug of ice sticking out of the place where you would put a cork. Most probably the bottle will have several large cracks, and sometimes the glass will be found in pieces scattered about for some distance. It is for this reason that I suggest that you put out the bottle in the evening and leave it until morning. If you made the experiment in the day time, you might, in your wish to see how it is going on, happen to examine it just at the time the bottle bursts and get hurt by the flying bits of glass. In either case, whether the ice projects at the mouth of the bottle, or the bottle is broken, it is plain to see that the bottleful of ice is larger, takes up more room, than the bottleful of water, and that water does not, "like other things contract by cold"—that is, not all the time. Water, common as it is, is a most remarkable liquid, and there is nothing more wonderful about it than the way it behaves just before freezing. When water is cooled it "does like other things contract," and it keeps on contracting until it is cooled down to about 39° (to be exact 39.2), and then, if the temperature goes still lower, it begins to expand, and when reaching 32°, it becomes solid, or ice, it is larger by about one-eleventh of its bulk. In expanding, this force is so great that it will burst an iron vessel if confined in it. Bomb shells, which you know are thick cast-iron, have been filled with water and then a wooden plug driven in to close the hole. These shells were exposed to the cold; in one case the bomb was cracked and a sheet of ice forced out of the opening. The other had the plug forced out to a great distance, and the ice came out in a long cylinder. This expansion of water is one of the

Great Forces in Nature.

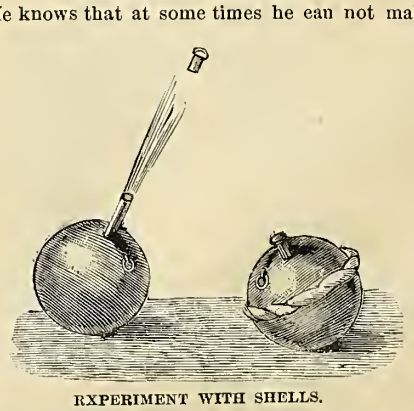
Not only do we see it bursting water-pipes and breaking pitchers, and even strong casks, and splitting large rocks, but in a quiet way it helps grind away the surface of the hardest stone. Water finding its way into minute pores and crevices of the rocks and freezing there, by its expansion it breaks off from them little particles, which accumulate to form soil. I think my young friend has already seen that ice floats because water, in freezing, expands, and a given bulk of water is lighter when changed to ice. This slight expansion, just enough to allow the ice to float, may seem a small affair, but when we think that

The World would hardly be habitable

without it, it is far from being an insignificant matter. Let us imagine the reverse, that the ice was a trifle heavier than water, and instead of floating it sank! We should then have no skating, at least not until the pond or river were frozen solid. We should have no fishes, and it is not probable that a deep lake would thaw out after it were once frozen. With such bodies of ice all about us, the climate would be changed, our crops, if we had any, would be different The more we think of such things the more are we impressed with the wonderful wisdom shown in matters that the unthinking regard as trifles....Another question by my young friend, and a seasonable one, is

About Making Snowballs.

He knows that at some times he can not make



EXPERIMENT WITH SHELLS.

a solid snow-ball either by pressing in the hand or by rolling. The making of a snowball illustrates one of the many interesting things about ice. If you have

two pieces of ice, the surfaces of which are moist from melting, and place one upon the other, with their flat surfaces together, they will in a few minutes be frozen together, and if you lift the top piece, the other will be lifted with it. This property possessed by ice, of uniting when two surfaces come together, is called *regelation*, a word meaning, to "freeze again." In a general way regelation may be explained by supposing that when the two surfaces are brought together, the interior of the ice is sufficiently cold to freeze the moisture upon them. In February of last year I showed how to make a pretty experiment

To Illustrate Regelation,

to which you may refer. Support a block of ice on two chairs, or in any other convenient manner. Take a small copper wire, about the size of a knitting needle, pass it over the ice, bring the ends together below, and hang to them a heavy weight, such as a basket of stones or of old iron. After some hours the wire will be found running through the middle of the ice, which will be perfectly solid, not a crack or mark to show where the wire entered. This experiment shows that

Ice will melt under pressure.

The particles of the ice directly under the wire are, by means of the weight, under pressure sufficient to cause them to melt. As the ice melts, the wire sinks, there being no pressure above the wire, regelation takes place, the small quantity of water freezes, and the ice is as solid as at first. The solidity of a snowball depends upon regelation taking place between the minute portions of ice of which snow is composed. You know that the harder you can squeeze the ball the more solid and icy it will become. By means of a powerful press, snow may be made into solid ice.—When you come to study in Geology about glaciers and their wonderful effects in changing a good deal of the earth's surface, you will find regelation has played an important part.

Our Puzzle Box.

NUMERICAL ENIGMAS.

I am composed of 12 letters:
My 8, 4, 10, 12, 7, 9, 11, is an ancient hero of romance.
My 1, 5, 3, 9, 6, 7, 4, 11, is a very fragrant shrub.
My 2, 6, 7, 2, 10, is an Eastern Country.
My whole is a well-known adage. E. L. M.

2. I am composed of 20 letters:
My 1, 5, 2, is a vessel of various form.
My 20, 18, 19, 10, is a measure.
My 4, 9, 3, 17, is a plant and its seed.
My 7, 16, 13, 14, 16, 19, is a title in divinity.
My 11, 12, 5, 9, is dismal.
My 8, 15, 18, 16, 1, 19, is an infidel.
My whole is a much studied book. CHARLIE.

PI.

Het steneain saylaw harnedess herit shores barseat, reven heswelting.

EASY ONE-WORD REBUSES.

DECAPITATION AND TRANSPOSITION.

1. Behead a fish and make him well and healthy;
2. Behead a tree, transpose and make it wealthy;
3. Behead a pedestal and make a fish;
4. Transpose a roseleaf, then, and make a dish;
5. Behead an animal, transpose,—a flower;
6. Transpose an insect,—part of shady bower.

CROSS WORD.

My first is in sincerity but not in hope or faith,
My next is in poor orphan but not in little waif,
My third is in the gospel but not in sacred truth,
My fourth is in God's providence but not revealed in Ruth,
My fifth is in immensity but wanting in expanse,
My sixth is in futurity but not in vision's glance,
My seventh is in division but not in rule of three,
My eighth is in the heavens, the earth, the skies, the sea.
For man—'twas said—it is not good,
(*My whole*, by this, is understood),
And yet the Man of men, we know,
Enjoyed it while on earth below. F. J. S.

DIAMOND.

Down.	*Across.*
1. Found in rubbish.	1. Seen in lumber.
2. A boat.	2. A tub.
3. A juicy, pulpy fruit.	3. A watch-tower.
4. To possess.	4. To hold by main force.
5. Found in a vault.	5. Seen in a fountain.

(Only three different letters used in the whole diamond). HENRY ALICE DONOGH.

ANAGRAMS.

1. An atom out.
2. All cut aces.
3. Be his Eve.
4. Rub side.
5. Enter Matt.
6. Ned's shrews.
7. Great is Mat!
8. Come plain.
9. A solem taint.
10. As I pant one.

PUZZLES.

1. The following items have each three letters: the central letters, read downwards, name a kingdom.

1. A plant. 2. A bird. 3. A generation. 4. A mighty weapon. 5. A verb. 6. An animal. 7. To decline. 8. A tree. 9. To shoot forward.

2. I MIT A TEA GO ODM ANB U TN EVE RCOUN TERFE I THIM.

BLANK LOGOGRIPH.

Fill the blanks with words that may be spelled with letters from a certain word of four letters.

Mother, may I go to —— —— soon as I like? —— "——" won't you?

Answers to Puzzles in the December Number.

EASY LETTER ENIGMA.—The letter G.

NUMERICAL ENIGMA.—Daniel Webster.

RIDDLE.—Sound.

WHAT IS IT?—The wicked flee when no man pursueth.

METAMOREMS.—1. Hoop. 2. Civil. 3. Point. 4. Kite. 5. Lamp. 6. Violin.

DIAMOND.—
M
B I G
M I S E R
G E M
R

PUZZLE.—D I C E (E= one sixth of twelve, D= 500, I=1 and C= 100.

A PICTURE PUZZLE.—Turn the picture upside down and then look at it.

INDIAN TRIBE PUZZLE PICTURE.—1. Sacs and Foxes. 2. Arapahoes 3. Chickasaws. 4. Pawnees. 5. Mandeans. 6. Seminoles. 7. Diggers. 8. Cherokees. 9. Tuscaroras. 10. Black feet.

"What's the Use of It?"

This question we overheard the other day at a friend's house. It was addressed by an active boy to his mother who was encouraging him to perfect himself in a school lesson. This is a very important question, one that should be asked a great deal oftener than it is. In another form we may ask of this or that business, work, study, or play, "will it pay?" A great part of the failures of young people as well as of older people, in business, in amusement seeking, and in character also, would be avoided, if they more carefully thought over *beforehand* all the unfavorable as well as favorable points, and then honestly decided whether it would pay.

Fun with a Linchpin.

Three boys of our acquaintance are good, kind hearted, generous fellows, who would not intentionally do any mean act. They are also active, fun-loving. They have just the talent and abilities to make excellent men, and we have considered them among the best and most promising boys we know of. Recently they saw a farmer selling potatoes from his wagon, and made some jocose remark about one of his horses. He rather gruffly told them to "go away." No doubt he was weary and no one enjoys having sport made of what he may not be able to help. A few minutes later he carried a basket of potatoes to the cellar of a customer, and the boys noticed that the linchpin which held one of the wheels on, was loose and partly out. Had they acted upon the impulse of their heart's best and real feelings, they would have pushed it back into its place, or have told him about it. But, prompted by their fun-loving natures, in a thoughtless moment they pulled the pin out and dropped it on the ground, half wishing or hoping, perhaps, he would see it, but yet thinking what fun it would be to see the wheel come off, and the potatoes dumped into the street. So they went off a little distance, putting on an unconcerned look, but watched for the result. On starting the team the wheel left the axle, the potatoes did tumble and spread out in amusing style, and the boys had a hearty laugh. But the crash frightened the apparently dull team: they started on a jump which threw the farmer off his balance; he fell in front, and a wheel crushed the bones of his right arm, and barely escaped crushing his head also. He is now confined to his bed, and will never be able to use his arm at hard work. The horses ran against a tree, not only scattering the potatoes widely, but smashing the wagon, and the broken tongue maimed one of the horses so that he had to be killed. Had these boys stopped to look ahead, and see the possible result of what, at the first impulse, seemed so small a matter as pulling out a bit of iron, would they have done it? We like to see our young friends cheerful, happy, we had almost said frolicsome, and will say it in the best sense of the word—but, dear boys, whenever you are planning any enterprise, or sport, remember the "Linchpin," and stop long enough to think what may be the outcome, and don't run risks, hoping that chance may bring all out well. Chance is a fickle thing, not to be trusted.

About "Specific Gravity."—Useful to Understand and Remember.

The "Gravity" or weight of anything means how strongly it is drawn down towards the center of the earth. The same bulk of different substances is drawn down with a different amount of force. For example, a piece of cast-iron is attracted to the earth about $7\frac{1}{5}$ times as strongly as the same *bulk* of water. Water at the temperature of 60° is taken as a standard of measurement or 1, and the proportionate weight of the *same bulk* of any other substance is called its special weight, or "specific gravity." It is often very convenient and useful to understand this, for if we know the specific gravity of any substance, we can quickly tell how much any measured quantity of it will weigh by simple rules of arithmetic, without scales or steel-yards.

Weight of Water (Avoirdupois).

1 solid or cubic foot of water (1,728 inch.) weighs $62\frac{1}{2}$ lbs.
$27\frac{1}{8}$ inches of water ($27^{648}/_{1000}$) weigh..... ..... 1 lb.
1 Gallon (wine) water (221.184 inches) N. Y. State..8 lbs.
1 Gallon (do.) water (231 inches) United States.8.355 lbs.
1 Barrel (do.) water ($31\frac{1}{2}$ gallons) 7.276$\frac{1}{2}$ in.) do...$263\frac{1}{8}$ lbs.

A common Barrel holds about $4\frac{1}{5}$ (4.21) solid or cubic feet. For all ordinary purposes we may calculate a barrel for each $4\frac{1}{5}$ feet; and a barrel of water to weigh 263 lbs. *Example A:* A box 4 feet square inside and 4 feet deep, contains 64 solid feet, or nearly $15\frac{1}{2}$ barrels.—*Example B:* An Acre contains 43,560 *square* feet or 6,272,640 square inches.—A rain fall of only one inch deep would give 6,272,640 solid inches of water, or 3,630 solid feet. Dividing 3,630 feet by 4.21 gives 862 barrels of water, or 226,850 pounds, or over 113 *tons!*

Weighing by Measuring (Without Scales).

As we now know the weight of any bulk of water, if we know the *Specific Gravity* of any substance, that is its weight compared with the same bulk of water, we have only to measure it, see how much the same bulk of water would weigh, and then multiply this by its specific gravity.—*Example C:* The specific gravity of cast-iron is about $7\frac{1}{5}$ (or 7.207). A solid foot of water weighs $62\frac{1}{2}$ lbs.; so a

A HAPPY AFTERNOON IN THE BIG ROOM UNDER THE ROOF.

solid foot of cast-iron weighs 62½ × 7.207, or 450 lbs. 7 ounces.—*Example D:* Wood is lighter than water. The specific gravity of dry Hard Maple is say 0.644. Multiply 62½ lbs. by 0.644, gives 40¼ lbs. as the weight of a solid foot of the maple wood. Each foot of such wood would carry 22¾ lbs. more without sinking in water.—Dry shell-bark Hickory is just the weight of water.—Common Air, at 60°, is 816 times lighter than water. About 13 solid feet of air, or 3 barrelfuls, weigh 1 pound.

Specific Gravity of some Common Things.

	Average.		*Average.*	WOOD (DRY).	*Average.*
Alum	1.724	Ivory	1.825		
Beeswax	0.960	Lard	0.947	Hickory (best)	1.000
Brandy	0.837	Lead (cast)	11.400	White Oak	0.855
Brick	1.950	Marble	2.740	White Ash	0.772
Butter	0.942	Mercury	14.000	Red Oak	0.728
Chalk	2.784	Milk	1.032	White Beech	0.724
Coal (Anthr.)	1.600	Oil (Castor)	0.970	Apple Tree	0.697
Copper (Coin)	8.915	Oil (Linseed)	0.940	Black Birch	0.697
Diamond	3.535	Oil (Whale)	0.923	Black Walnut	0.681
Glass (green)	2.642	Platinum	20.000	Hard Maple	0.644
Glass (plate)	2.760	Rosin	1.100	Soft Maple	0.597
Gold (Coin)	17.647	Salt (Com.)	2.130	White Elm	0.580
Granite (Quin)	2.652	Silver (Coin)	10.534	Red Cedar	0.565
Honey	1.456	Sugar	1.600	Yellow Poplar	0.563
Ice	0.930	Tallow	0.941	White Birch	0.530
Iron (bar)	7.731	Tin (hard'd)	7.300	Chestnut (A.)	0.522
Iron (cast)	7.207	Zinc (cast)	7.190	White Pine	0.418

Rule: Get the solid contents of any substance in inches, by multiplying together its length, breadth, and thickness. Add three cyphers to the right (.000) and divide by 27.648, which will give the number of pounds the same bulk of water would weigh. Then multiply this by the specific gravity, cutting off the three right-hand figures for decimals.

Example E: A bar of iron 120 inches long, 3 inches wide, and ½ inch thick (120×3×½) contains 180 solid inches. Add .000, and dividing by 27.648, gives 6.51, or about 6½ lbs. as the weight of an equal bulk of water. Multiplying this by the specific gravity of bar iron (7.731) gives 50⅓ lbs. as the weight of the iron bar.

The Children in the Garret.

Look in your Dictionary, and see if the origin of the word garret is clear to you. What relation does the early meaning of the word, as used by the French and others, have to that which is now conveyed by the same word? Whatever may have been the old garret of other countries, many a boy and girl knows what an "old garret" is at the present day in our own broad land. It may not be a place of safety or a room for a guard to be posted to overlook the town—an upper room in a tower from which all invaders could be seen—it may not be any of these, and yet I dare say that children have sometimes climbed the garret stairs to gain a better view of many things. For what does a child go to the garret? That is a difficult question to answer—almost as hard as to tell what he can find in the well stored upper room, often unfinished, and in some parts so low that even a seven-year old boy may bump his head against the rough rafters.

It was my good fortune to pass my childhood on a farm, and live in one of those large, old-fashioned houses, better known for the largeness of the great pillars to the piazza or "stoop," and the smallness of the window panes, than the beauty of its architecture or the whiteness of its once painted surface. It was a large house and had been in the family for many years—or I should have said the same family had been in it for a long time. As a result of this there had been a large accumulation of those old machines that in former years were used in the making of the wool into clothing, and the fibers of the flax plant into various sorts of cloth. There were hatchels and reels, spinning wheels and shuttles, and last but not least the large loom upon which the carpets and cloths were made. What fun it used to be to get out some of these old dust-covered machines and set them to running! Boys like wheels because they suggest something that will go, and if I am not mistaken there were not as many good wheels in that old garret when I reached my teens as when the neighborhood heard one morning that there was a little boy on the hill. Aside from the machines there were old boxes, churns—and a churn is a machine, I suppose, and many other things that had served out their term of usefulness, and were sent to the garret to be out of the way. Any place that is used as a store-room of old things is sure in the long run to be stocked, and if it were not for the children there would be no place for other worn out things. Some of the smaller things were put into the old chests and trunks, and it was my delight to drag out from them the candle sticks, that once held the "lights of other days," and the molds in which those lights were run, served many a good turn in my boyish sports. It may be said with confidence that the garret has been one of the best rooms in the house to many a child; a room the dark-winding stairway up to which was early learned. The artist has given his view of an afternoon in the garret. In the midst of all the old accumulations of the family, the two children have found a box for a seat and an old book from a pile of dusty ones, that makes them forgetful of the passing hours, and it may be they will either have to be called by a voice from below stairs, or the deepening twilight will at last remind them that the day—and a happy one, is done. UNCLE HAL.

When, Where, and How to Procure Western Farm Homes.

Being the Results of the Observations of one of the Editors of the American Agriculturist, who has just completed a 5000-Mile Tour, in Securing Information for the Readers of this Journal.

Do not go West with a family, unless you have enough money to make a fair start.

Do not borrow money to go West. The majority of those we have met in their Western homes, who have failed, have been those who came on borrowed money, or without enough funds to ensure a send-off.

After reading this article, select such region as you think you will like best. People generally prefer to keep in the same latitude they have lived in.

Go in the spring and get acclimated.

Take as little baggage and as few heirlooms as possible. They cost money for freight and in addition are apt to be an encumbrance in a new home.

Provide yourself with a small collection of good books for the family; and before going renew your subscription to the *American Agriculturist*. It will be just as serviceable in the new home as in the old.

If you are able to do so, you better first go out and explore before taking your family with you.

Do not attempt to explore too much. We have met people beyond the Missouri River who had visited nearly all the Land Grants, and the more they had travelled, the more unsettled they were as to where they should locate.

Decide upon your climate and locality, and then select your land. If you wait too long, you are apt to become very much unsettled.

Do not go West if you have a sick family. Change of climate may benefit them, but it is not worth while to take the chances.

Do not go West expecting not to be homesick, for your mountain scenery, your forests and your streams which present such a contrast to the monotony of endless prairies. It may be very lonely at first, but you will soon plant your own trees, have pleasant surroundings, and near neighbors.

Do not go expecting to become rich immediately. Several years of good crops may be required to place you in easy circumstances.

If you are a clerk on a small salary in the city, and have a few hundred dollars ahead, give up your clerkship, and strike for the western lands. There is no very great amount of experience required in cultivating these prairies.

If you have abundance of money, settle on the lands in the near West. If your funds are comparatively limited, go on still further, where as good lands can be purchased at lower figures.

What is known as the *Homestead Law*, gives to a settler, on condition of permanent improvement and continued residence for five years, 80 acres of land within the limits, or 160 acres of land outside of the railroad limits. The only costs to him are those of the Land Office, which do not exceed $20 for every 160 acres. Honorably discharged soldiers are allowed to select their 160 acres within the railroad limits.

The *Preëmption Law* permits any citizen, or person who has declared his intention of becoming such, to locate 160 acres of land within railroad limits at $2.50 per acre, or outside of railroad limits at $1.25 per acre; the only conditions are that he shall make permanent improvements and reside for one year on the property.

The *Timber Culture Law* gives to any citizen of the United States, or one who declares his intention of becoming such, 160 acres, either within or without the limits of the railroad, on condition that he plants one-sixteenth of the land with trees, and cultivates the same for eight years. Laws in Minnesota, Nebraska, Dakota, and other Western States and Territories, make additional inducements to settlers to plant trees, in the way of paying money direct to the settlers at so much per acre, or in reducing the amount of their taxes.

But the great bulk of desirable government lands lying within the limits of railroad Grants have been taken possession of under the Homestead, Preëmption, and Timber Culture Acts. It is better to buy land within a few miles of a railroad, than to procure lands without cost under Government Acts, located a considerable distance from railroads. The saving of horseflesh in drawing produce to market, will generally, in a short time, make up more than the difference So then, as a general rule, those who desire to locate in the West or far West, should purchase lands from the Railroads in preference to Homesteading or Preëmpting them. The terms of the Railroads are generally moderate, and they hold out special inducements to immigrants. What they desire is population. Some of the managers

SCENE IN THE IOWA-MINNESOTA LAKE REGION.

of these Railroad Grants have told us that they would be glad to give their lands away, if, by so doing, they could secure a good class of population. It is the increased business for their roads growing out of this increased population which they are working for.

Chicago and Northwestern Lands.

The Chicago and Northwestern railroad system, which is rapidly covering the North-west and Far West, embraces some large tracts of land in the Grants originally given to roads now constituting divisions of this great network of over three thousand miles of track. One Grant comprised mainly of timber lands lies in Wisconsin and Northern Michigan, and is reached from Chicago by the Milwaukee, Green Bay and Marquette division of the road. It originally embraced 788,000 acres in Michigan and 397,000 in Wisconsin, making a total of 1,185,000 acres. Of this amount 202,000 acres have so far been disposed of in Michigan, and 67,900 acres in Wisconsin, making a total of 269,900 acres. This leaves to be sold 586,000 acres in Michigan, and 329,100 in Wisconsin, a total of 915,100 acres. There were sold during the 18 months ending last November, 100,000 acres in Michigan, and 17,000 in Wisconsin. Those lands comprised in the Michigan and Wisconsin Grant of the Chicago and Northwestern being valued almost mainly for the timber, have a wide range of prices, from 25 cents to $50 per acre; still good farming land, heavily timbered with maple, beech, etc., can be purchased from the Company for from $2.50 to $5 per acre. Persons of very small means, who are unable to buy prairie farming lands, and wait a year or more for crops, can advantageously settle upon these woodlands, inasmuch as the timber, for which there is a ready market, affords them an immediate livelihood. They can forthwith begin the work of felling the forests of pine and other valuable timber. These forests skirt the railroad for miles, and we derived not a little pleasure in riding through them on an engine.

The great and attractive Grant of the Chicago and Northwestern comprises a stretch of beautiful prairie country, lying upon both sides of the Winona and St. Peter division, extending across the width of Southern Minnesota into Dakota, through what is known as the Wheat Belt of America. The strip of land in which they are embraced, is about one hundred and fifty miles long, and some forty miles wide. It begins near Sleepy Eye, forty-four miles west of St. Peter, and extends in a north-westerly direction, taking in the whole or portions of Brown, Cottonwood, Redwood, Murray, Lyon, Lincoln, Yellow Medicine, Lac Qui Parle Counties, Minn., and Brookings, Deuel, Grant, Codington, and Hamlin Cos., Dakota. The original Grant consisted of 1,751,000 acres. During the eighteen months ending in November last, 182,582 acres were sold. The total amount of acres sold up to the present time is 720,024, leaving a balance in the market of 1,030,976 acres. Before starting for these lands, go to the Northwestern Depot in Chicago, and confer with Dr. W. H. Stennett, Gen'l Passenger Agent, and Charles E. Simmons, Land Commissioner, who will furnish you with all the desired information regarding the best modes of reaching the lands, the price per acre, etc., and sell you "Explorer's" tickets to various points in Minnesota and Dakota. On our tour of inspection we took the train which leaves Chicago at nine o'clock in the evening, and arrives at Sleepy Eye, a distance of 479 miles, at six o'clock P. M. the next day. There is a second train, leaving Chicago at ten o'clock A. M., and reaching Sleepy Eye at ten the next morning. Round trip tickets, and low fares generally, are given to those who desire to visit the lands. Within four years' time over 300,000 acres have been sold to actual settlers, who are now the owners of farms and homes of their own. In response to a note, sent since our trip through the region, Mr. Simmons writes: "Our cheaper lands are at the west end of the Winona and St. Peter branch, and are equal in quality to the higher priced lands further east. Taking the land together, they range in price from $2 to $8, the average now being probably about $4 to $4.50; this average is of course changing with every sale made." The titles to all these lands come in direct line from the General Government and are without dispute. The soil is loamy, varies from two to five feet in depth, is well watered, and produces wheat, corn, flax, oats, rye, barley, buckwheat, and root crops generally. These lands likewise hold out inducements for stock farming and dairying operations. Furthermore, the railroad markets are close at hand and fuel is procured at moderate prices.

Iowa Railroad Company's Lands.

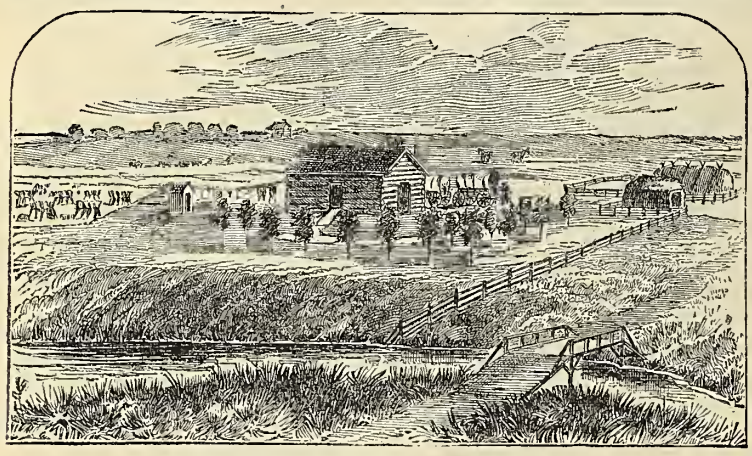
The original amounts of lands included in the Grants under the control of this Company were 1,713,529 acres. 1,322,422 acres were sold up to Dec. last year (1881), of which about 300,000 acres were sold during 1881—mostly to actual farmers, in average lots of 160 acres. These lands lie in the north-west corner of Iowa. The lots on hand for sale are located principally in Ida, Crawford, Monona, and Woodbury Counties, on the line of the Chicago and Northwestern Railroad; and in Buena Vista, Cherokee, Plymouth, and Sioux counties, on the line of the Illinois Central Railroad. Explorer's tickets can be purchased at the Company's office in Chicago, and at the main stations on the Chicago and Northwestern and the Illinois Central Railroads.

There are likewise about 22,000 acres of these lands lying in Nebraska, on either side of the Sioux City and Pacific Railroad. Prices for the grazing lands range from $3 to $5 per acre. Farming lands are offered at from $5 to $10 per acre. Five (5) per cent discount is made for cash payments. When the buyer purchases on short time, one quarter of the purchase money is paid down, and the balance in one, two, or three years at six (6) per cent interest. When purchased on long time, one-fifth is required cash down, and the balance in two, three, four, and five years, at six (6) per cent interest.

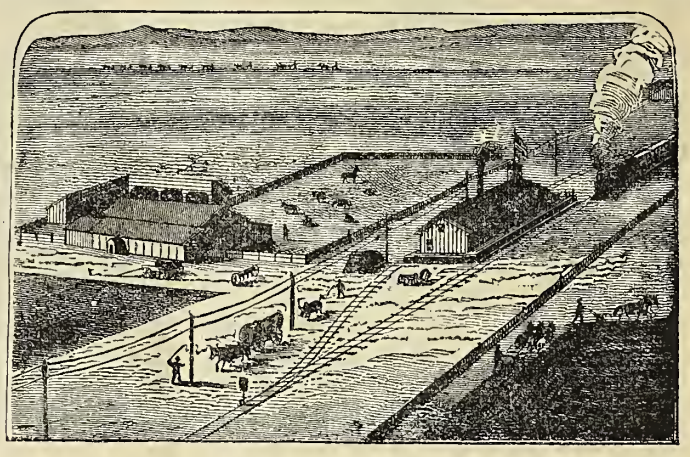
These lands produce corn, wheat, and grain of all kinds. Cattle, hogs and sheep are raised with profit. The soil is good and the climate is favorable. For further information address Charles H. Clark, Register, at Cedar Rapids, Iowa; or C. A. Florence, Agent, corner Dearborn and Randolph streets, Chicago, Illinois. What we have said above regarding the lands of the Chicago and Northwestern Railroad, apply generally to these under control of the Iowa Railroad Land Company.

St. Paul and Sioux City R'y Lands.

These lands lie in South-western Minnesota and North-western Iowa, stretching along the railroad from a point some miles south-west of Mankato, Minn., to Seney, Iowa, a few miles north-east of Sioux City. The original Grant comprised 1,680,000 acres, of which 860,000 acres have been sold to date, leaving a balance of 820,000 acres to be still disposed of. During the past year (1881) about 123,000 acres were sold, the great bulk of it to English capitalists, who have erected over 300 houses for tenants leasing the lands. From inspection and conversation with those in charge of this grant, we conclude that their most available lands for settlers at this time are to be found in Cottonwood, Jackson, Martin, Murray, Nobles, Rock, and Watonwan Counties, Minnesota, and in Dickinson, Lyon, Osceola, and Sioux Counties, Iowa. These lands are held at an average price of $6.50 to $7.50 per acre on time, one-fifth of the principal and interest at 7 per cent on the deferred payments being required in advance—the balance being divided into four equal annual payments, interest at 7 per cent, payable annually in advance. The same lands are sold for $5.80 to $6.50 for all cash down. This portion of Minnesota, like North-western Iowa, is well adapted to mixed farming, and, it is claimed, especially well adapted to stock growing and dairying. There is a great abundance of the native "blue-joint" grasses, which, it is asserted, are superior to the tame grasses of the East for fattening and milk producing qualities. The region is bountifully supplied with water from numerous lakes, ponds, and streams, which generally abound in fish. Recently considerable flax has been raised by new settlers, who are thus enabled to secure a crop from the first year's breaking of the soil. Settlers generally on the prairies of the West and North-west are now raising flax with profit as their first crop. The St. Paul and Sioux City Railroad lands are from 1,000 to 1,200 feet above the level of the sea. The soil is a warm loam from two to three feet deep, well adapted to corn, oats, rye, barley, and buckwheat. Fruits of various kinds thrive, trees grow rapidly on the prairie lands, and as an inducement to forest culture a legislative enactment in Iowa exempts the owner from taxation for ten years' time on every hundred dollars worth of his property for every acre of trees which he plants and cultivates. Though the winters are long, the air is dry and generally free from malaria. Spring commences at the close of March or beginning of April. Harvesting generally begins in July, and frost makes its appearance about October 1st. You can visit these lands by going to Sioux City and working north-easterly. A better course—the one we pursued—is to proceed direct to St. Paul, confer with the Land Commissioner, J. H. Drake, who furnishes such information as may be required, then start early in the morning south-westerly, passing through Mankato and other pretty villages. When the foliage is on the trees, the ride from St. Paul down through the "Big Woods" region of Minnesota is exceedingly picturesque. There are likewise numerous points of interest further west, including a Russian Mennonite Colony of 2,000 at Mountain Lake; the large Barden Stock Farm at Bingham; a steam flouring mill at Worthington, run entirely with wild hay as fuel, and the Close Brothers' Colony at Sibley, Iowa, of over 500 English gentlemen, controlling over one hundred thousand acres, which are worked on the tenantry system.



A MINNESOTA PRAIRIE HOME.



A DAKOTA WHEAT FARM.

Milwaukee and St. Paul R. R. Lands.

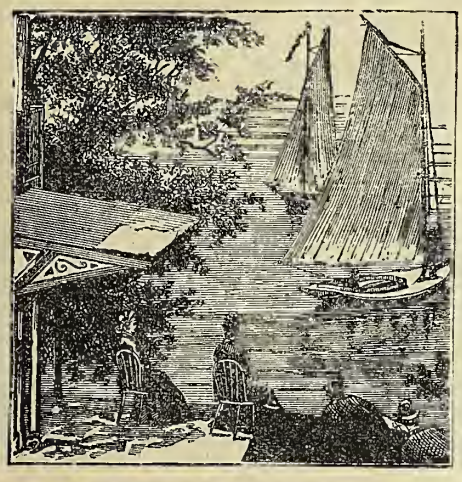
In extending its railway system, the Chicago, Milwaukee and St. Paul Railway Company has come in possession of large grants of land in the following counties of Iowa: Cerro Gordo, Winnebago, Wright, Hancock, Franklin, Humboldt, Kossuth, Emmet, Palo Alto, Pocahontas, Dickinson, Clay, and O'Brien; and in Minnesota, Martin, Jackson, Rock, Murray, and Pipestone Counties. What we have said regarding the soil, climate and productions of the Chicago and Northwestern, and the St. Paul and Sioux City lands, applies generally to these lands. They range from $3 to $8 per acre, one-sixth of the purchase money has to be paid down, and the remander in five equal annual instalments, with interest at six (6) per cent. Those seeking further information with regard to them should address the Land Commissioner, Willis Drummond, Jr., at Milwaukee, or send for the November *American Agriculturist*, 1880.

Northern Pacific Railroad Lands.

The Land Grant of the Northern Pacific Railroad was about 42,000,000 acres, of which some 3,400,000 acres have already been sold. The total sales during last year were 185,123 acres, at an average of $4 per acre. The Grant stretches across the continent. Six millions of acres of farm lands are now offered for sale along the line of the Northern Pacific Railroad in Minnesota and Dakota. The average price per acre at which the lands have hitherto sold is $3. Last year $4 per acre was fixed as the uniform price for all agricultural lands of the Company east of the Missouri River in Minnesota and Dakota. The preferred stock of the Company is taken at par in exchange for the lands, and a rebate of 25 per cent is allowed for the acreage broken and cultivated within two years from date of purchase. The price of all lands west of the Missouri River is $2.60 per acre cash, to actual settlers. Westward to Jamestown, Dakota, which is 347 miles west of Duluth, about all the Government lands and the best lands of the Company, that is, those in close proximity to the railroad—have been pretty generally taken. Between Jamestown, on the James River, however, and Bismarck, on the Missouri River, a distance of 100 miles, there is still plenty of excellent farming land, both for purchase from the Company and for government entries. The Railroad Company grants the same privileges and concessions to settlers upon Government lands, as are given to purchasers of their own lands. For example, there is a reduction of one half on fares to both, and one half for freight on household and farming goods and implements. Col. R. M. Newport, the Land Commissioner, whose headquarters are at St. Paul, stated to us that of the lands now in market the most desirable for immigrants are those in Dakota, between the James River, and the west line of Dakota, and in the Yellowstone Valley in Montana. The Company likewise has lands in Central Minnesota, which are being taken by those who prefer some timber with prairie openings.

All of the land in Dakota lying along both sides of the track, except the so-called "Bad Lands," is regarded as wheat producing. Immediately west of the Missouri River, the country is considerably broken, and will be more largely devoted to grazing and dairying, than to wheat raising. Following on westward to Young Man's Butte, a hundred miles west of Bismarck on the Missouri River, you get into a rolling prairie country, which it is expected will soon be occupied by wheat growers, and settlers engaged in general farming. Upon reaching the Yellowstone Valley, a hundred miles still further on to the westward, we found, during our trip through this vast region in November last, very superior grazing lands. In a note to us, since our return, Col. Newport writes: "The value of the Yellowstone lands for grazing purposes has been already demonstrated, and now that the country is accessible by the completion of the railroad to Miles City, a distance of 770 miles from St. Paul, we expect a tide of emigration to pour into that region. The interest in the Yellowstone Valley is evinced by the large number of inquiries we have by mail daily with respect to it." The business of the Northern Pacific Railroad increased one-third during 1881, which shows that the country is rapidly developing. All the farmers naturally turn their attention to wheat raising. For several years in succession, the crop has been uniformly good During 1881 the yield was not so large per acre, but it is claimed that the advance in price more than made up for deficiency in quantity. From inquiries at various points, we infer that the prices paid to the farmers for wheat delivered along the line of the road, ranged in 1881 from $1.18 to $1.35 per bushel. The Dalrymple and other large farms west of Fargo were minutely described in the October *American Agriculturist* for 1880. The Williams

Farm, consisting of several thousand acres, which cost the owner not long ago 85 cents per acre, is now offered for sale at $25 per acre. We found Morchead, Fargo, Jamestown, and other points along the road, particularly in the Red River Valley, alive with land buyers, land speculators, and land explorers. Fargo presented all the bustle and



A WESTERN IOWA MINIATURE LAKE.

activity of a city, and the growth and development of the surrounding country since we visited it three years ago, is truly wonderful.

St. Paul and Manitoba R'y Lands.

The network of railway lines, known as the St. Paul and Manitoba, and extending from St. Paul northerly to the frontier line, and westward to various points in Minnesota and Dakota, comprises over 1,200 miles of road, which run both through and parallel with the Red River Valley, and embrace some of the finest wheat growing regions of Minnesota. The original amount of the Land Grant to the St. Paul and Pacific R. R., of which the St. Paul and Manitoba is the successor, was 3,577,400 acres. Up to this time, 1,463,400 acres have been sold, of which amount 141,965 acres were disposed of from Jan. 1881 to Jan. 1882. The prices of the remaining 2,114,000 acres range between $5 and $8 per acre. It is generally sold on seven years' time, in annual payments with seven per cent interest; a rebate of $3 is allowed by the company for breaking and cropping the land. The sales last year were made to large numbers of settlers, the average being 160 acres to each. The gross earnings of the road for the ten months ending October 31st, were $3,842,167, against $2,561,916 for the corresponding period in 1880. There are 125 elevators along the various lines of the road, with a combined capacity of 6,500,000 bushels, thus affording ample storage for grain. The region of country drained by the Red River and its tributaries, and which it is claimed is peculiarly adapted to wheat raising, is about 220 miles long, and 156 miles wide, comprising in round numbers some 22,000,000 acres. It extends about an equal distance east into Minnesota and west into Dakota. It is computed that this area of country is capable of producing, at a low average, 20 bushels of wheat to the acre, or a total of 440,000,000 a year. This is 40,000,000 more than the estimated entire wheat crop of the United States for 1881. Of these 22 million acres of wheat-producing land about one million acres were under cultivation last year. The soil is dark, varies in depth from eighteen inches to 2½ feet, upon a deep subsoil of clay, and is said to possess "the most valuable ingredients known to chemistry for the perfection of vegetation." "It retains," says a writer upon the subject, "such a degree of chilliness that the eggs of insects deposited in it do not incubate, which accounts for the immunity this section has enjoyed from grasshoppers and other insects."

It is computed that the wheat yield in the Red River region last year amounted to about 12,000,000 bushels. The lands of the St. Paul and Manitoba road lie on the east side of the Red River. Mr. James B. Powers, the Land Commissioner, whose headquarters are at St. Paul, will furnish information regarding character and cost of lands in various counties. In reply to our question, as to where he would advise settlers to locate, he answered, "wherever vacant lands can be found on the lines of the road."

Some of the places are growing with great rapidity, notably Crookston, which flourishing village, when we visited it three years ago, numbered four houses. It now appears to be the center of what promises to become one of the richest of agricultural regions. Mr. Charles Hallock, whose name is familiar to the public as the former editor of "Forest and Stream," and of the "Sportsman's Gazetteer," has established a village on the railroad north of Crookston, not far from the Canadian boundary. It is named after himself, and the many friends, in both hemispheres, of the genial writer will be pleased to learn that it gives promise of attracting many settlers. On the preceding page is a view of the prairie home of a settler near Hallock, in Kittson Co. The owner, John Oleson, came hither from Iowa, in 1879, and took a homestead and tree claim of 320 acres, finely located, with 30 acres of timber. He had but very little money at first, but like most Swedes has been very industrious and frugal. Now, in less than four years' time he has a home and farm valued at $3,000. We might cite several other poor men who have done equally as well. Then going to Kennedy, in the same county (Kittson), we find in H. W. Donaldson, a representative of the large and wealthy land owners, who come to the wheat regions of Minnesota supplied with ample funds to carry on farm operations on a large scale. He is managing a farm of 12,500 acres belonging to himself, and an absent partner, Dennis Ryan. He writes that his gross receipts from the mixed products of 1,000 acres last year will amount to $25,000, of which $10,000 will be clear of all expenses.

While this portion of the United States appears to be so well adapted to profitable wheat raising, those seeking new homes must not forget that the winters here are long and cold, as in the Northern Pacific country. Here as elsewhere through the vast West they should make themselves familiar with all the conditions favorable and unfavorable before permanently locating.

Union Pacific Railroad Lands.

The Land Grant to the Union Pacific Railroad Company consists of the alternate sections, or square miles contained in a belt 1,032 by 40 miles, extending through Central Nebraska, Northern Colorado, Southern Wyoming, and Northern Utah. The aggregate is a little short of 12,000,000 acres, distributed as follows:

	Acres.		*Acres.*
In Nebraska	5,000,000	In Utah	1,400,000
In Wyoming	4,500,000	In Colorado	600,000

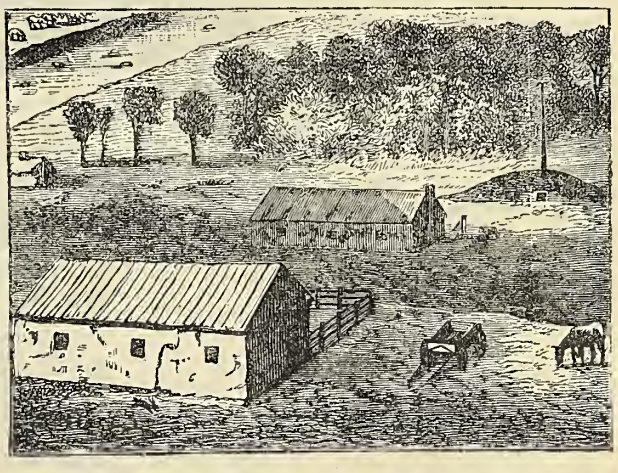
These may be divided into agricultural, grazing, and mineral and waste lands. The agricultural lands, in Eastern Nebraska and in Utah, comprise about one-third of the Grant. The sales thus far have been restricted to the agricultural lands. The total amount sold is 2,225,400 acres; proceeds, $9,958,800. The average price per acre is a trifle less than $5. The sales during 1881 amounted to about 100,000 acres, for about $500,000. There still remain unsold in Nebraska about as follows:—

22,000 acres at an average price	$10.00
130,000 acres at an average price	6.00
190,000 acres at an average price	4.00
300,000 acres at an average price	3.00
1,000,000 acres at from $1.25 to	2.50

The land is sold on long credit or for cash in full; in the latter case a discount of 10 per cent is made from the appraisal. In time sales, one-tenth of the purchase money is required down. The remainder is divided into nine equal annual instalments, with interest on deferred payments at 6 per cent.

The most attractive locations for new settlers at the present time are found in Colfax, Platte, Merrick, Buffalo, and Dawson Counties, taken in the order in which they are named. These counties are diversified with hill and dale, valley and upland. The surface is generally smooth and covered with an abundant growth of excellent grasses. The soil is deep, free from stone and gravel, and easy of tillage. Water is pure and abundant. Many of the streams offer excellent water privileges, some of which are already utilized. The market facilites are first-class. Colfax and Platte Counties particularly, are already well settled and improved, and have the aspect of farming communities in the older States. Comfortable dwellings and substantial barns and outbuildings have taken the places of the rude habitations of the early settlers. Roads are laid out and kept in repair, and the streams bridged; school-houses, churches, mills, and other appliances of civilization are found at convenient distances. The various productions of the Eastern and Middle States are grown here with success. Wheat and corn are the leading staples. Hay, broom-corn, flax, and sorghum are specially profitable, seldom failing in large returns. Owing to the backwardness of the spring during the past season, wheat was not an average crop in yield, but the quality was excellent, and the money

THE UTAH HOT SPRINGS, NEAR OGDEN.



A KIOWA, COLORADO, SHEEP RANCH.

value exceeds the wheat crop of any previous year. Corn crop was very fine. Many instances occur where the farmer has received from his corn crop alone, during last season, enough to pay for his farm. Buffalo and Dawson Counties, while adapted to general farming, offer special facilities to live-stock raising, and the production of wool and beef. The number of sheep and graded cattle has been largely increased during the past year, and many thousands more might be fed in these counties with great profit to their owners.

The number of cattle fed upon the grazing lands has also largely increased during the past year or two. Large shipments of fat cattle were made last year by the Kansas Pacific Railroad, the Chicago, Burlington, and Quincy Railroad, which extends through Southern Nebraska into Colorado, and the Sioux City and Pacific Railroad, which now reaches the cattle region of Northern Nebraska. The Union Pacific alone has moved 170,000 head of fat cattle to Eastern markets, and the prospects are that this number will be greatly augmented during 1882. Mr. Leavitt Burnham, Land Commissioner, or Mr. Howard Kennedy, Assistant Land Commissioner, who has accompanied the representative of the *American Agriculturist* on several trips to these lands, will furnish any further information if it may be required. Their headquarters are at Omaha.

Kansas Pacific Railroad Lands.

The Union Pacific Railway Company owns and offers for sale in tracts of 80 acres and upwards, 5,500,000 acres in Central and Northern Kansas and Colorado, located along its Kansas & Pacific division. These are under the management of S. J. Gilmore, Land Commissioner. What has been said above regarding the other lands of the Union Pacific Railway Company, will apply generally as regards price, character of soil, and so forth, to these lands along the Kansas division of this railway system. Excellent crops are raised in the Eastern portion of the Grant, while the lands in Western Kansas and Colorado, are better adapted for stock grazing. We spent some time visiting them—for example, the sheep ranches on the Kiowa, and present an engraving of one of them, drawn by the artist who accompanied us. These sheep ranches and their out-door life appear very attractive to young men of energy and education in the East, who, in past years, have come out here in considerable numbers. The winters are much milder in Kansas than in the States further to the north. The climate is generally dry in winter. Those who would like to visit this portion of the country with a view to settling, should address Mr. Gilmore, at Kansas City, Mo.

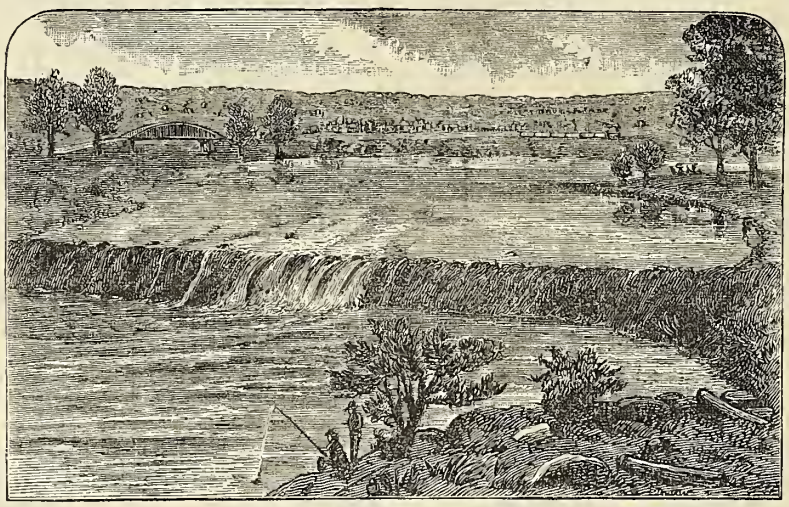
Lands of the B. & M. R. R. in Nebraska.

The original amount of the Land Grant was, in round numbers, 2,375,000 acres. There were sold to the close of 1881, a grand total of 1,840,000 acres. The sales for 1881 were 130,000 acres. There remain unsold 535,000 acres. Commissioner McFarland does not consider that any locality along the line of the road, in the eastern half of the State where the lands are situated, has any greater advantages, in an agricultural point of view, than others. The bulk of the lands south of the Platte River are in the counties of Lancaster, Seward, Saline, Webster, and Franklin, Neb. Those north of the Platte River are in the counties of Madison, Antelope, Boone, Greeley, Howard, Sherman, and Valley, Neb. A reference to a map will show that these lands all lie within the eastern half of the State, and within 200 miles of the Missouri River, bringing them well within the "rain belt," and settlers can find good lands in good locations in any of the counties. Prices range from $2.50 to $10 per acre on ten years' credit terms, with a discount for cash of ten per cent. The average price on ten years' credit would be about $4 per acre. Nebraska is developing rapidly, and being settled up with an excellent class of people, principally Americans, with a considerable number of Germans and Scandinavians, and very few of any other foreign nationalities. Railroads are being built rapidly in all parts of the State, and there are but three counties in which the company has land (viz. Sherman, Greeley, and Valley), that have not one or more railroads now in operation, and these three already have lines projected through them. Farmers are devoting their attention more to stock, and the latter are increasing very rapidly—past experience having shown the State to be admirably adapted for the successful raising of all classes of animals, and that greater profits are derived from converting the grain into beef, mutton, and pork. For further information address J. D. McFarland, Land Commissioner, Lincoln, Nebraska.

Atchison, Topeka & Santa Fe Lands.

The original Grant of lands by Congress to the Atchison, Topeka, and Santa Fe R. R. Co., was three million acres, all located within twenty miles on each side of its line in the State of Kansas. These lands were first placed upon the market in March, 1872. Up to the present time there have been sold 1,232,389 $^{9}/_{100}$ acres to 8,717 purchasers, at an average price of $5.11 per acre, being an avarage of 140 acres to each purchaser. The range of prices for the land is from $2 to $12 per acre.

The average price per acre of unsold lands of all kinds is about $5. Choice farm lands can be bought from $5 to $8 per acre. The terms of sale are as follows: No. 1.—Eleven years' time, seven per cent interest, full appraised price. No. 2.—Six years' time, seven per cent interest, twenty per cent discount from appraised price. No. 3.—Two years' time, thirty per cent discount from appraised price. No. 4.—Cash, thirty-three and one-third per cent discount from appraised price.



SOLOMON RIVER, KANSAS.

To settlers desiring to find a location adapted to general farming—for farming and stock-raising combined—Col. Johnson, the Land Commissioner, recommends any of the counties in South-Central Kansas, but to those desiring to make a specialty of sheep-raising, or sorghum, broom-corn, or winter wheat in connection with sheep-raising, we would recommend South-western Kansas.

From 1874 to 1878, the mania of the farmers along the Arkansas Valley was for raising wheat, that crop proving a very successful one during those years; but, since that time, wheat has not been a paying crop; and farmers are now turning their attention more particularly to cattle and sheep, and to the production of forage crops. The wheat acreage is on the decline. The corn acreage shows a very rapid increase from year to year; while the increase in cattle will average one hundred per cent per annum during the past two years; and the increase in the quantity of sheep from Newton on the A. T. & S. Fe R. R. to the west line of the State has averaged more than two hundred per cent per annum for the same length of time.

Nearly every herd of cattle is now being crossed with thorough-bred Durham or Hereford stock; and many stock farms, devoted exclusively to the breeding of thorough-bred cattle, are now to be found. The same is true of the sheep interest. Car-load after car-load of thorough-bred Merino bucks from New York, Vermont, Ohio, and Michigan, having been shipped into South-west Kansas during the past two seasons, to improve the native stock of the plains.

The success obtained by cattle and sheepmen in this portion of Kansas is attracting the attention of the best stock-raisers of the East, who are now investing largely; and the influence of this success upon the farmers could not be otherwise than favorable. Broom-corn proved the most remunerative crop grown during 1881, yielding largely, and commanding a high price. Sorghum is getting to be an important crop. Four large mills have been erected this year to convert it into syrup and sugar; while cattle and sheepmen are growing it exclusively for winter feed, finding it the cheapest and most satisfactory fodder for wintering cattle and sheep. The larger sheepmen sow it broadcast in the spring, let it grow through the summer without cultivation, and don't cut it in the fall, but turn their sheep in for a few hours every day through the winter. The sheep eat it with avidity, consuming every portion of it, from the top to the root. Mutton of fair quality was marketed in Denver last February; the wethers, from which it was produced, having had no other food than that obtained from these sorghum fields and the Buffalo-grass of the prairies adjoining. It is estimated that there are now over 500,000 head of sheep in the Arkansas Valley, where there were less than 100,000 two years ago. Col. A. S. Johnson, the Land Commissioner, who is located at Topeka, Kansas, will furnish any further information to those who apply to him personally or by letter. We have found him in our trips to that region always ready to fully communicate the facts we were searching for.

St. Louis and San Francisco R. R. Lands.

In the year 1849 the Pacific R. R. was incorporated to construct a road to the western boundary of the State of Missouri. In 1853 the Pacific R. R. was authorized by an Act of the General Assembly of Missouri to accept a Grant of land from the United States Government, to aid in the construction of its road, also to build a branch running south-westerly through the State. In 1865, the Pacific R. R., together with the S. W. Branch, were sold by the State under a foreclosure, and the latter was purchased by John C. Fremont and others, and organized as the South West Pacific R. R. In 1866 the road was again sold, and reorganized as the South Pacific R. R. by eastern capitalists, many of whom are the present owners of the property. In 1871 the South Pacific R. R. Co. was authorized to merge in and consolidate with the Atlantic and Pacific R. R. Co., a corporation having a Grant of ten alternate sections of land to the mile, on each side of its line, and twenty alternate sections, on each side, in the Territories through which it may pass to the Pacific. In 1870 this road was completed to Venita in the Indian Territory, a distance of 365 miles. The total number of acres granted within Missouri, was 1,666,184.04 acres, and there are about 900,000 acres accruing to the Company between Seneca and Venita—which will be placed upon the market whenever the Indian title is extinguished. This is one of the finest sections in the Mississippi Valley, now only the hunting ground of the Indian, which, if opened to settlement, would soon be in cultivation.

In 1876, owing to financial troubles, that portion of the A. & P. R. R. lying in Missouri was sold, and again organized under its present name. Since

the original grant there has been sold by the several companies 948,438.95 acres, a large proportion sold to actual settlers purchasing farms ranging from 40 acres to 320. A large majority of the settlers are from the Northern and Eastern States, and they have brought with them their industrious and thrifty habits. The sales for 1881 amounted to 71,883.24 acres, at an average of $3.43 per acre. Perhaps the best proof of the value of the country for farming and stock-raising will be a statement of products that were shipped during last year over the road from the various stations. Of wheat there were 24,750,398 bushels, and 449,747 bushels of corn, and 336,654 bushels of other grain. There were also shipped 8,262 car loads of stock. From the Iron region there were produced 22,532,657 lbs.

THE OGALLALLA, NEBRASKA, CATTLE DRIVE.

of pig iron, and 157,562 tons of iron ore, and from the Lead district 20,593,571 lbs. of pig lead and 46,612,890 lbs of zinc ore. The Granby lead mines owned by the Company, produce annually 1,225,966 lbs. of lead, and 21,323,936 lbs. of zinc ore, and yield as royalty to the Company $18,056.60 per year.

For further information address W. H. Coffin, Land Commissioner, St. Louis, Mo.; or William H. Eaton, Assistant Land Commissioner, St. Louis, Mo. We procured much valuable information in conversation with these gentlemen, regarding all this South-western country.

St. Louis, Iron Mountain, and Southern Lands.

There are comparatively few acres of land belonging to this Company left in Missouri. In Arkansas, however, the Grant comprises 786,551 acres. The average price per acre is $3.50. There were sold during 1881 about 50,800 acres. Mr. Thomas Essex, the Land Commissioner at Little Rock, Arkansas, will furnish whatever information may be desired by those who would like to migrate to Arkansas. Referring to Arkansas as a desirable State for farmers and planters, a recent writer says: "The average per acre of cotton produced is only exceeded by Louisiana, and that only by one per cent—but per inhabitant, we grow more cotton than any State in the Union. Our fruit and root crops would make a comparison equally as great in our favor; and as for raising stock of all kinds for profit, no Northern State is our superior. The timbers of Arkansas, as to variety, quality, and quantity, are unsurpassed on the continent, a combination of advantages which makes ours the most promising State in the Union."

Resources of the South-west.

The South-western Immigration Company, which furnishes information free regarding the South-west, generally, has an exhibition room at 243 Broadway, N. Y. Soils, stones, timber, and ores are shown, by the side of cotton, sugar, tobacco, cereals of all kinds, and a vast number of fruits and vegetables—all making an exhibition well worth the examination of any one interested in the prosperity of the country, while to those who are looking southward for future homes, it tells more than a long dissertation on the products of the country. The Eastern Manager of the Company, Mr. J. N. Victor, is always ready to give visitors any required information. This Company is different from others, in the fact that it has no lands for sale. It is simply a Bureau of Information, maintained by several railroad companies combined. Its sole object is to promote immigration, by making known the resources not only of Texas, but Arkansas and Louisiana.

Artificial Fertilizers.—These may be used at a great profit or at a loss, so much depends upon the crop and the locality where it is raised. The trade in these is now upon a very different basis from what it was a few years ago. The day has gone by when a secret compound, with a high-sounding name, can be sold through a display of advertising. A maker of fertilizers can not hope for success unless his articles are just what he represents them to be. He must be willing to sell his fertilizers by analysis, or he can not, in some States, sell them at all. The chemist is a good friend to the maker of good fertilizers. But if he shows that a fertilizer, upon a fair valuation of its constituents, is worth only about half the price asked, he is a good friend of the farmer. Farmers have, of late years, learned more about fertilizers. They know that the leading articles that they can best buy in this form are, Nitrogen, Potash, and Phosphoric Acid. These have an accepted commercial value; an analysis shows about the quantities of each in a fertilizer, and a simple calculation will tell whether or not the article is worth the price asked for it. The analyses made during the past few years, under the direction of the New York State Agricultural Society, and those by the Connecticut and New Jersey Experiment Stations, have done much to place the sale of fertilizers upon a proper basis, and to protect the farmers of those States in their purchases. When the farmer can feel sure that he gets his money's worth in a fertilizer, more certainly than in a ton of city manure, his prejudices against artificial manures will disappear. Among the makers of fertilizers the "Mapes Formula and Peruvian Guano Company" early took the ground that the proper way to build up a reputation was to court analysis of their fertilizers. We have recently been shown the returns of some 30 analyses made at different Experiment Stations; the samples were in part sent by farmers, and in part were taken by representatives of the Stations from stocks on sale. In no case did the percentage of the valuable constituents fall short of the amount claimed. The valuation at the Stations, as calculated from the analysis, averaged for the whole, $1.15 per ton higher than the selling price. Some samples were worth rather more, and some a little less, but the average is as above stated. It is but proper to say that the results obtained by the tobacco growers in Connecticut, the growers of asparagus, cauliflowers and other "truck" on Long Island, and the potato and wheat farmers of New Jersey, all show that the plants find in the fertilizers the value indicated by the chemists.

Corn and Potatoes in Rhode Island.—A most active and useful Agricultural Society is that of Washington Co., R. I. It offered premiums for the best crops of Indian Corn and Potatoes raised upon an acre in 1881, and the report of the awards is just published. The prize for the best acre of corn was awarded to G. T. Collins of Westerly. The crop of 95 1/5 bushels of shelled corn, and the accompanying fodder, were valued at $107.20. Cost of production $68.25. Net profit to the acre $38.95. Other premiums showed a gain per acre of $27.50, $24, and $20.75 respectively. The first prize for potatoes was also taken by Mr. Collins. His crop was 200 bushels of large and 41 bushels of small potatoes, the total value was $176.40; being produced at a cost of $42.70 it gave a profit upon one acre of $133.70. The variety was Late Rose. Other growers returned a profit per acre of $106.32, and $88.04, the variety in these two cases being Early Rose. The useful feature in these reports is, the detailed account of the methods of preparing the land, and of cultivating the crops, as they show what may be done by every farmer. "Farming is played out in New England" say the croakers, but where corn and potatoes may be made to return a profit of over $100 to the acre, those who are wise will adopt the better methods of cultivation.

Burr or Buhr-stone Mills.—There are some natural products which serve for certain uses far better than any substitute thus far devised. Cork is one of these products; the Teasel is another. No substance can replace cork in all the uses to which it is put in the laboratory, and no artificial contrivance can do the work of the teasel in raising the nap upon cloth. In another direction, the conversion of grain into flour, has for centuries been accomplished by grinding between two surfaces of a peculiar stone known as "Burr," or "Buhr-stone," and no material has been found to accomplish the grinding so satisfactorily. This stone is a kind of quartz rock naturally so filled with cells that these spaces or openings occupy about the same area as the solid rock. The best stones of this kind are found in France at a quarry near Paris, where entire mill-stones are quarried, though commonly a stone is made up of several pieces fitted together, and secured by means of an iron hoop. Burr-stones are found in other countries; in this country they have long been quarried in Pennsylvania, Ohio, and New York, and later in South Carolina. These, while they are used in mills, are regarded as inferior to those from the French quarry. With the great improvements in farm machinery various mills have been provided for farm use. These have been made of iron or steel, and though they answer to prepare grain for domestic animals, they cut rather than grind and do not convert the grain into flour as do stone mills. The mill with large slow moving stones, besides not being portable, costs too much at the outset, and requires too great a power to be available for farm use. These difficulties were overcome many years ago by the late Edward Harrison, New Haven, Conn. He used the Burr stones, but instead of the ponderous slow moving ones, used small stones driven at high speed, and made a great improvement in placing the grinding surfaces vertically instead of horizontally. These mills are made of various sizes, to run by horse or steam power; they may be supplied with bolters and all the needed appliances of a complete flouring mill and allow of a milling establishment to be set up with a moderate outlay.

New Foreign P. O. Money Orders.—Australia, including New South Wales, and New Zealand, by the new arrangement, beginning Jan. 1, can now send remittances direct to the United States, and vice versa, through any of the Money Order Post-Offices in each Country. This will prove a great convenience, as there is a large trade between these antipodal countries and our own. The *American Agriculturist* has long had an extraordinary large circulation in New Zealand, as well as in various parts of Australia. Their seasons are just the opposite to ours, their Jan. 1, being our July 1. A New Zealand citizen recently remarked to us: "We get your paper four to five months in advance of your own countrymen; your July number reaches us in February." —The Pound Sterling is equal to about $4.84 United States Gold or Currency. One dollar is a little over 4*s.* 1½*d.*, and $1.50 equals 6*s.* 2½*d.*—Extra postage on the *American Agriculturist* 9½*d.*

Economy in Sugar Making.—Carelessness in tapping trees and "catching" the sap are generally the rule in the sugar bush. *Post's Eureka Sap Spout*, or something of the kind should be employed. They cost but a trifle, and add not a little to your supply of sugar.

Moving Soft Maple Trees.—"C. M. S.," asks if, in view of the severe drouth of last summer, it will be safe to move Soft Maple trees after the ground becomes frozen? We infer from this that it is proposed to remove the trees with frozen balls of earth around their roots, an expensive operation under any circumstances, and with so manageable a tree as this Maple, quite unnecessary. We should move the trees in early spring, cutting the tops back very severely. The nearer the tree comes to a bare pole, the sooner will it form a new and satisfactory head.

The Arnold Arboretum.—An item of Boston news is going the rounds of the papers to the effect that the City Council of Boston has purchased the Arnold Arboretum. It would be an unfortunate thing were this true, which it is not. The Arboretum at Jamaica Plain is so situated that the city of Boston, by adding a small tract of land, benefits the Arboretum somewhat, while the city in turn, gets the use, for park purposes, of a vastly larger area of beautifully diversified grounds, which will in time be the finest of the many parks in and around Boston. The arrangement in no respect interferes with the purposes of the Arboretum, so admirably planned by its Director, Prof. Sargent.

Sowing Onions Broadcast.—A correspondent writes that he proposes to break up a piece of prairie, harrow it well, and sow it to onions, broadcast, leaving the crop to take care of itself. He asks what kind of seed to sow, and how much to the acre, as if this were a common method of cultivation. If there is a crop that ordinarily requires the closest care in the way of weeding, one the success of which largely depends upon thorough weeding just at the right time, it is the onion. While we do not think that this loose hap-hazard culture will pay, not having known of an attempt of the kind, we cannot say that some sort of a crop may not result from the treatment. As this method of growing onions is quite new to us, we would ask if any of our far western readers have ever tried or known of the trial of onion seeds in this manner. The weeds that interfere with onions in the older States are mainly from Europe, and it may be that on a newly broken prairie, the absence of these allows onions to grow. Let us know about this.

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For EACH CROP, containing just the necessary PLANT FOOD it requires.

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"Pelican" Bone Fertilizer.
Agricultural Chemicals.
Ground Bone.

STRICT PURITY GUARANTEED.

Our circular, containing facts interesting to farmers, furnished on application.

H. J. BAKER & BRO.,
215 Pearl Street, N. Y.

Money Values.—So much has been said about exorbitant profits of fertilizer manufacturers that is unjust. One firm, the Brown Chemical Co., of Baltimore, the manufacturers of Powell's Prepared Chemicals, which are advertised in this journal as "Good Fertilizers," have taken the initial step in refuting charges of this kind by guaranteeing that all their fertilizers contain plant life to the extent of the money charged for them, as may be determined by any agricultural chemist. The above firm is reliable, and of best repute in its own city, and their guarantee is very good proof in dealing with them you get your money's worth.

It is a remarkable fact that you can swallow any quantity of **L. E. RANSOM'S BUTTER COLOR** and the effect will not be different than from eating the same quantity of Butter. No farmer should neglect to use so harmless a color.

THE RAHN Natural Inclined Hedge Fence. Costs only 15 cents per rod, turns any stock in 3 to 4 years, has no base sprouts, no roots at the surface, no brush to handle. Pat'd Nov. 1, 1881. Address with stamp,
S. K. RAHN, West Elkton, Ohio.

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And with determined policy to build only the BEST MACHINERY from the BEST MATERIALS, and in the BEST MANNER OF CONSTRUCTION, and with continued improvements, have attained the HIGHEST STANDARD in excellence of workmanship, simplicity of design and capacity of power. For a quarter of a century have maintained their manufacture, the

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SEEDS, POTATOES & SMALL FRUITS,

Together with many miscellaneous articles for the FARM AND GARDEN, are described in

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Which will be sent to every one who is enough interested to send their address, and a stamp to pay postage. Write for it now, it will pay you.

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We advise all Subscribers

to read advertisement of the

Acme Pulverizing Harrow,

Clod Crusher and Leveler,

on page 85, this number.

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Endorsed by the *Agriculturist.* See page 216, May number, 1881. Made to wear. Keep time and not break down. Stem Winder and Setter. German Silver Nickel-plated Case. Thousands sold and no complaints. *Agriculturist* says: "*It will perform quite as satisfactorily as many that cost several times as much.*" Circulars free. $10, by express. J. S. Birch & Co., 38 Dey St., N. Y.

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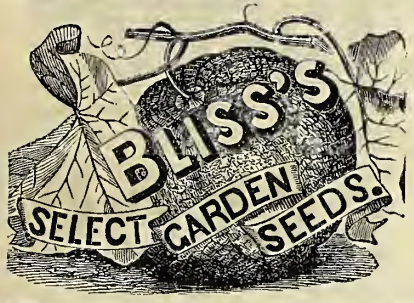
Extra Early, Requires No Bushing. Exquisite Flavor.

The best variety for forcing, and the best for early growing in the garden.

Circulars giving a full description mailed to all applicants.

CAUTION.—As there is another Pea in the market called "American Wonder," be sure and call for "BLISS' AMERICAN WONDER."

PRICES.—One-third pint package, 20 cents; pint, 35 cents; quart, $1.00, by mail, post-paid. When delivered at our store, or sent by express at the expense of the purchaser: One pint, 40 cents; one quart, 75 cents.



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A YEAR — MONTHLY

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For 1882, issued early in January, contains descriptive and price lists of

Vegetable and Flower Seeds

of the choicest strain, and **Every Garden Requisite.** Novelties of Merit only offered. It is richly illustrated, and gives brief, practical directions for cultivation. Mailed free on application. **HENRY A. DREER,**
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OXFORD CORN.—A Superior Variety, producing 60 to 70 bushels per acre the past dry season. Best corn grown in this great corn region. Two ounce sample sent to any address, with price list and copy of our paper for ten cents. Address HAYES & BRINTON, Oxford, Chester Co., Pa.

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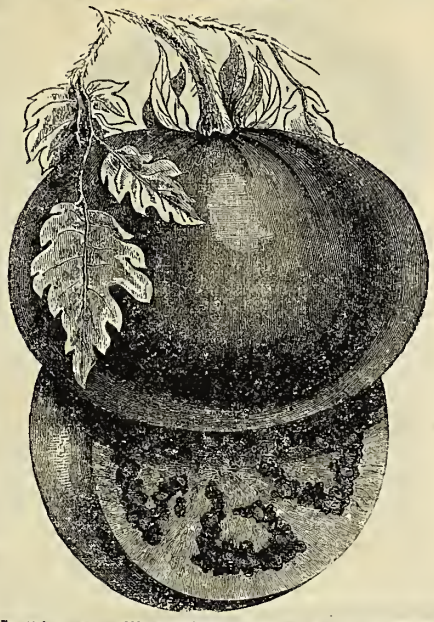
MAYFLOWER.



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TRUE and GENUINE. FRESH and RELIABLE.

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The character of LANDRETHS' SEEDS has been substantiated *beyond all question.*
They are the STANDARD for Quality.
Over 1500 acres in Garden Seed Crops under our own cultivation.
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Wholesale trade prices to dealers on application.
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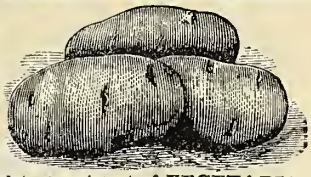
OUR ANNUAL CATALOGUE OF
SEEDS



For 1882, will be ready by January, and sent free to all who apply. Customers of last season need not write for it. It is an elegant book, with scores of illustrations, and one lovely colored **Flower Plate.** We offer a complete assortment of **VEGETABLE, FIELD and FLOWER SEEDS,** all of the **Choicest Quality.** Among specialties, we offer the **LOUISVILLE DRUMHEAD CABBAGE,** the finest ever grown as a second early variety, and about the only sort Western Gardeners will grow. **TRY IT.** We have pure **Russian White Oats, Choice Seed Potatoes, Field Seeds, Seed Drills, Florists' Supplies,** etc. *Send for Catalogue.*

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Garden and Flower **SEEDS**
Peas and Beans.
Select Seeds at low prices. Catalogues free.
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Tools for GARDENERS
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☞ Write for New List.

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100 ACRES IN SMALL FRUITS. Manchester, Mount Vernon, Bidwell, Banieht and other choice Strawberries. Early Welsh, Queen, Cuthbert, and Turner, the best hardy Red Raspberries. Snyder, Wallace, and Taylor, the hardiest and most productive Blackberries. **KIEFFER'S HYBRID PEAR,** handsome, large, good quality, bears young and abundantly. "40 Years Among Pears," "40 Years Among Small Fruits"; either for 15 cts; both for 25 cts. *Catalogue free.*

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SOW ALL SEEDS AND FERTILIZERS

The **No. 2** hand machine, price **$6,** sows from 4 to 6 acres per hour: **No. 1,** (see cut) price **$30,** from 10 to 12, *at the same time sowing far more evenly than by any other method,* also saves the Seed. Send for Circular. **Agents Wanted. BENSON, MAULE & CO.,** Philadelphia

Wm. H. CARSON,

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Catalogue of Seeds now ready, and will be mailed as usual to my customers, and to all who apply by letter.

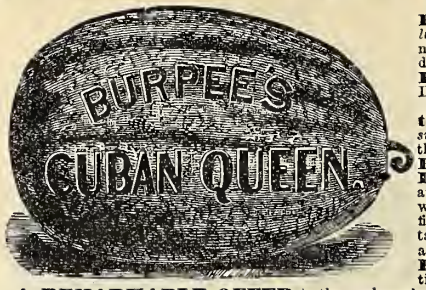
Gardeners and Farmers,

And every one interested in having good

Seeds, Plants, or Tools,

should send their address for new price list, now ready. Address E. P. THOMPSON East Rockport, Ohio.

81-POUND CUBAN QUEEN WATER-MELON.



This new Melon from the West Indies is certainly **The Largest and Finest Variety** in the world. Flesh, bright red, remarkably *solid, luscious, crisp* and *sugary*—far surpassing all others, and on a Melon of enormous size there is barely half an inch rind! The first prize Melon the past dry season weighed **81 Pounds.** We offer **$50.00 IN CASH PRIZES FOR 1882** for the three largest Melons grown from our Seed. Do not fail to try and see how large the Cuban Queen can be grown.

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A REMARKABLE OFFER to those who order direct from this advertisement. The above **12 packets** of the choicest and **New Vegetable Seeds,** all full size, are worth at our catalogue prices **$1.15, actual value,** but we will send the entire collection, by mail, post-paid, to any address, for only **50 CENTS,** or **5 Collections for $2.00.** Get your neighbors to order with you and thus secure your own collection **Free!** This is certainly an unparalleled offer, and many may ask **HOW CAN WE AFFORD IT?** We answer, by growing and importing these Seeds in immense quantities, papering them by the hundred thousand, especially that we may be able to offer this great inducement for new customers to give our Seeds **a fair trial.** We spend thousands of dollars in advertising, but rely on the quality of our Seeds to retain the permanent patronage of all who plant them. Our Seeds are all **Warranted First-Class,** and are prononnced by the most critical market-gardeners to be altogether **UNRIVALLED IN QUALITY. TRY THEM!**

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We have advantages as **Seedsmen** of which we wish to tell the public. Thirty years experience as **PRACTICAL MARKET GARDENERS AND FLORISTS,** gives us such knowledge as to enable us to judge not only what are the best kinds for **Fruit, Flower or Vegetable** crops (whether for Private or Commercial Gardening), but also to thoroughly test the quality of all **Seeds** and **Plants.** Our **Greenhouses** and **Frames** in Jersey City, are the **largest in America,** coveriug upwards of four acres, solid in glass, employing an average of seventy men throughout the year.

☞ We send our Illustrated Catalogue of **"Everything for the Garden," on application FREE.**

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Is an **Elegant Book of 150 Pages, a Colored Frontispiece of Flowers, and more than 1,000 Illustrations** of the choicest Flowers, Plants, and Vegetables, and Directions for growing. It is handsome enough for the Center Table or a Holiday Present. Send on your name and Post Office address, with 10 cents, and I will send you a copy, postage paid. This is not a quarter of its cost. It is printed in both English and German. If you afterwards order seeds deduct the 10 cents.

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Productive as the Crescent; firm as the Wilson; large, handsome, delicious. Will be offered by subscription. New **White** Strawberry, the **Fairy. Orient,** and **Satin Gloss** a grand success the past season. Manchester, Mt. Vernon, etc. **Early Prolific** and **Reliance** Raspberries, still ahead. 20 acres now in bearing. Kiefer and Lecont Pear wood in quantity. All the best Small Fruit Plants. Prentiss and other choice Grape-vines, Trees, etc., at low prices. Send for List. J. C. GIBSON, Woodbury, N. J.

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Catalogues gratis.—Showing how and what to plant, with much valuable information. For spring, one million of strawberry plants, largely of Sharpless, Crescent Seedling and Wilson's Albany. Full line of Peach, Apple, Pear, Cherry, Osage, Asparagus, Rhubarb, Raspberries and Blackberries, and all stock usually found in a first-class nursery.

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IROQUOIS CORN, the largest grain, smallest cob, and most productive variety in the world, package **25c. MAMMOTH CABBAGE,** 20 to **50 lbs.** each, package **25c. MAMMOTH PUMPKIN,** have been grown to weigh **150 lbs.,** package **25c. SNAKE CUCUMBER** 2 to **6 ft.** in length, coils up like a snake, package **25c. SANGUINEUS,** a tropical-looking plant, **10 ft.** high, covered with bright red fruit, package **25c. CHOICE GARDEN SEEDS, 10c.** per package. Asparagus (*Conover's Colossal*), Carrot (*Long Orange*), Cress (*Curled*), Cucumber (*Green Cluster*), Lettuce (*Silesia*), Musk Melon (*Nutmeg*), Watermelon (*Mt. Sweet*), Parsnip (*Long White*), Radish (*Scarlet*), Spinach (*Round Leaved*), Tomato (*Acme*), Turnip (*White Dutch*). **SELECT FLOWER SEEDS, 10c.** per package; Portulacca, Phlox Drummondi, Flowering Peas, Gilia, Fragrant Candytuft, Acroclinium, Marigold, and Double Zinnia.

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"Mr. Finch is perfectly reliable."—

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VEGETABLE, FIELD, FLOWER, AND TREE SEEDS.

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NEW CROP ONION SEED,

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Grown from the purest Stock possible, expressly for the Retail Market Garden Trade. We offer as follows for orders received during the month of January, 1882, cash with order. If by mail 16c. per pound extra.

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White Portugal or Silver Skin	"	"	**4.00**

My Seed is all grown directly under my own supervision, in Wethersfield, and from finest selected stocks. These Prices good for only 30 days. My Completc Catalogue of Seeds for 1882 will be sent free to all applicants.

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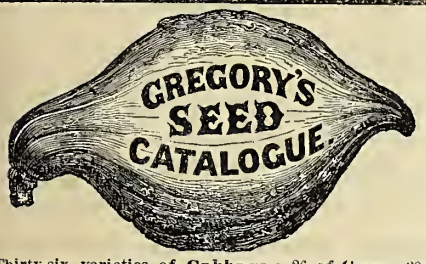
Seedsman, 492 & 498 Main St., HARTFORD, CONN.



Thirty-six varieties of **Cabbage**; 26 of **Corn**; 28 of **Cucumber**; 41 of **Melon**; 33 of **Peas**; 28 of **Beans**; 17 of **Squash**; 23 of **Beet**, and 40 of **Tomato**, with other varieties in proportion, a large portion of all which were grown on my **five seed farms**, will be found in my **Vegetable and Flower Seed Catalogue for 1882.** Sent **FREE** to all who apply. Customers of last season need not write for it. All seed sold from my establishment **warranted** to be both **fresh** and **true to name**; so far that should it prove otherwise, I will **refill the order gratis.** The original introducer of **Early Ohio** and **Burbank Potatoes, Marblehead Early Corn, the Hubbard Squash, Marblehead Cabbage, Phinney's Melon,** and a score of other new vegetables. I invite the patronage of the public. **NEW VEGETABLES A SPECIALTY.**

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SOLE MANUFACTURERS.
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THE SOILING PLANT is Branching Sorghum, grows luxuriantly when drill corn burns up. Three cuttings per season. Valuable green or dry. Seed 50 cts. per lb. by mail. S. C. SATTERTHWAIT, Aiken, S. C.

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6 for **$1**, 14 for **$2**, postpaid. *Greenhouse and Bedding Plants, Hardy Shrubbery, Seeds*, etc., by mail.
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ONLY $1. FOR ANY ONE OF THE **60**
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NEW AND RARE! and the CHOICEST collection of **DIME** Plants. All mailed *postage paid*, and *safe arrival guaranteed.* **A Catalogue of about 100 pages FREE.** *28th Year. 18 Greenhouses. 400 Acres.*
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The **only** establishment **making a SPECIAL BUSINESS of ROSES. 60 LARGE HOUSES for ROSES alone.** We **GIVE AWAY**, in **Premiums and Extras**, more **ROSES** than most establishments grow. Strong Pot Plants suitable for immediate bloom delivered safely, postpaid, to any post-office. 5 splendid varieties, **your choice**, all labeled, for **$1**; 12 for **$2**; 19 for **$3**; 26 for **$4**; 35 for **$5**; 75 for **$10**; 100 for **$13.** Our **NEW GUIDE**, *a complete Treatise on the Rose*, 70 pp, *elegantly illustrated—free to all.*
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For **only $1.00.** 12 Geraniums, **$1.00.** 12 Fuchsias, **$1.00.** 12 Carnations, **$1.00.** 6 of the above collections for **$5.00.** *All distinct sorts.* Strong plants, your choice, labeled, **sent safely** by mail, prepaid, to any post office. One of the finest *Illustrated Floral Catalogues* of **New** and **Rare Plants** and **Seeds, FREE**
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ROSES and GERANIUMS.

100	Assorted, by Express	for	**$5.00**
50	"	"	**3.00**
25	by Mail	"	**2.00**
14	" (Samples)	"	**1.10**
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All Leading Varieties in large supply. Warranted true to name. Prices low. Also, the celebrated

NEW WHITE GRAPE,

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Send stamp for Price and Descriptive List. Also Trees, Small Fruits, etc.
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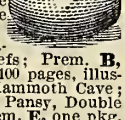
Pays for my **Illustrated** Fence Treatise, worth $5.00 to any farmer. Tells how to make **Self-Supporting Fence,** not patented. Tells How to Start a Locust Plantation, and will enable you to save 25 cts. on each rod of fence built.



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We advise all Subscribers
to read advertisement of the
Acme Pulverizing Harrow,
Clod Crusher and Leveler,
on page 85, this number.

E. A. Reeves'

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SEED STORE,

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DESCRIPTIVE CATALOGUE for 1882, fully illustrated, sent free to all applicants.

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Reliable and Warranted. Try them. I'll undersell any firm. I will not be beaten. I have the largest and best stock and 20,000 customers to prove it. Ladies and Gardeners say they never fail. All my life a Seed Grower. I defy all competition. I give more extras with orders than some firms sell. I have 50,000 beautiful Illustrated Guides FREE. Hundreds of costly engravings. Every one pictured, described & priced, many pkts as low as 3c. postage paid. Cheap as dirt by the ounce, pound, &c. My beautiful free Guide and Catalogue is worth many dollars. **R. H. SHUMWAY,** Rockford, Ill.

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Large Stock of Peach and Apple Trees.
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SMALL FRUIT PLANTS
HEADQUARTERS OF THE UNRIVALLED
NEW RED CURRANT
FAY'S PROLIFIC
GENERAL NURSERY STOCK
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SEEDS Colc's Reliable Garden, Flower, and Field Seeds are the best, and are sold at the lowest price. Garden Guide, of 44 pages, mailed free. Tells all about Gardening. Address
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To every farmer sending us his name we will send *The Clover Leaf*, an 8-page, 48-column farmers' paper, full of valuable information on the culture and harvesting of **CLOVER for SEED.** Say, when you write, where you saw this notice. Address **Birdsell Mfg. Co.,** South Bend, Ind.

THE SUGAR MAKER'S FRIEND.

Over 4,000,000 Sold.

Twenty-five per cent more Sugar every year, and a better quality, from **POST'S EUREKA SAP SPOUTS,** than from any others, is the verdict of over 20,000 Maple Sugar Makers that use them.

☞ **Their perfect** working with the *utmost satisfaction is* **guaranteed.** Only a trial is needed to convince one of their *superiority over all others.* If every **Sugar Maker,** not having tested them, will but tap *half* his sugar bush with the **Eureka,** the **coming Sugar Season,** a *full supply* the following season will be the result. If there is not an agent in your town, get a good responsible Hardware or other dealer, to order a supply *at once*, and not delay it until the season for tapping is upon you. Better have them two months *in advance* than a day *too late.* I will send you **Samples Post-paid on receipt of Ten Cents. Descriptive Circulars sent free.** Address at once **C. C. POST, Patentee, Burlington, Vt.**

Buy the Eurekas only, and escape all infringements upon my patents, and the penalties of the law.

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Address, CHARLES E. HIRES, 48 N. Del. Ave. Phila.

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☞Send your address at once, on postal for our Large Illustrated Catalogue of everything for the Farm or Garden. It costs nothing, but will save money. ☞Do not FAIL to examine it before ordering elsewhere.

BENSON, MAULE & CO.,
129 and 131 South Front Street, Philadelphia, Pa.

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SIMPLY AN ANNOUNCEMENT.

That **WE OFFER $60.00 IN CASH PRIZES** for 1882 for the three largest melons grown from our seed of **The Boss Water Melon.** This new melon combines all the good qualities. The flesh is of a deep scarlet, rich in sugar, and is always chrystaline and melting. It is among the earliest, is among the heaviest, the most productive, and a good shipper. Do not fail to try it; you will not regret it. Per packet 25 cts., 5 P'k'ts for $1. **MUSK-MELON—New Superb,** early, sugary flavor, one of the best, per packet 15 cts. **Cabbage, Landreth's Earliest**—Ten days earlier than any other variety, per packet 15 cts, **Celery, New Golden Heart**—Waxy golden yellow, per packet 10 cts. **Lettuce, new Paper White**—A fine tender sort, per packet 10 cts. **Lettuce, Bloomsdale Butter**—A variety that is fit for table use longer than any other, per packet 10 cts. **Squash, Essex Hybrid**—One of the richest flavored, finest grained and sweetest of all the squash family, per packet 10 cts. **Tomato, Early Hybrid**—One of the handsomest and best new Tomatoes, a good shipper, per packet 10 cts. **Bliss' American Wonder Pea**—Extra early, no bushing, exquisite flavor, per packet 15 cts. **Corn, New Egyptian**—Very sweet and productive, per packet 10 cts. **New Forcing Carrot, Extra Early**—The earliest, per packet 10 cts. **Cucumber, Bismarck**—Tender and crisp, fine flavor, per packet 10 cts. The above 12 packets, costing at Catalogue rates $1.50, we will send by mail, prepaid, for $1.00 or seven of the above assortments for $5.00.

ONLY 25 cts. **For Eight Choice Varieties of Vegetable Seeds,** as follows: **Beet,** Early Yellow Orange, **Cabbage,** Improved Brunswick, **Carrot,** Altringham, **Cucumber,** Tallby's Hybrid, **Lettuce,** the Hanson, **Musk-Melon,** the Hackensack, **Radish,** Woods' early frame, **Tomato,** Vick's Criterian. We make this liberal offer to induce any who have not already bought our seeds to give them a trial.

EIGHT CHOICE VARIETIES OF FLOWER SEEDS for only 25 Cents, comprising Antirrhinum, Balsam, Candytuft, Sweet Mignonette, Zonale Geranium, Petunia, Phlox Drummondii, and Zinnia. *All of these seeds will grow and are of the best quality.*

WRITE NOW for our handsomely Illustrated Floral Catalogue, 80 Pages, of **PLANTS, SMALL FRUITS** and **SEEDS.** It contains large lists of the finest Ever Blooming Roses, Geraniums, Fuchsias, Carnations and hundreds of other Choice Plants that we send Prepaid by Mail at **$1.00 per dozen.** It has also large lists of the choicest **Vegetable** and **Flower** Seeds.

$100.00 in 4 Cash Prizes

given to the persons sending us the four largest clubs for our Plants and Seeds. This is in addition to liberal club rates and premiums given to all who order. Address,

INNISFALLEN GREENHOUSES, Springfield, Ohio.

New MUSK-MELON, SUPERB

OUR **Great Offer** SEEDS $2.15 for $1.00

In order to introduce our seeds among new customers, and that all may test their **great superiority,** we will send free, by mail, on receipt of $1.00 (about cost of growing and papering, and amounting at Catalogue Prices to $2.15), our **Special Introduction Box of Seeds,** containing everything necessary for a family Garden. Large size packets of the following choice varieties: *New Cuban Queen Watermelon, New Golden Gem Muskmelon, American Wonder Pea, Livingston's Perfection Tomato (new), Golden Wax Beans, Extra Early Valentine Beans, Bastian's Extra Early Red Turnip Beet, Early Summer Cabbage, Premium Large Flat Dutch Cabbage, Perfection Drumhead Savoy Cabbage, Improved Long Orange Carrot, Stowell's Evergreen Sugar Corn, Improved Early White Spine Cucumber, Phila. Butter Lettuce, Yellow Danvers Onion, Champion Moss Curled Parsley, Sugar Parsnip, Cashaw Pumpkin, Extra Early Scarlet Turnip Radish, Golden Globe Summer Radish, American Savoy Spinach, Hubbard Squash, New Red Top Globe Turnip.*

Our **Flower Collection,** comprising **10** Packets of the **Choicest Flower Seeds,** sent postpaid on receipt of **25** cents, 5 collections for $1.00. Postage Stamps accepted as cash. Our Seeds are **warranted fresh, genuine, and reliable,** and we feel certain of making a permanent customer of every purchaser of one of these boxes.

Our Large Illustrated Catalogue sent free to any address.

JOHNSON & STOKES, Seedsmen,
1114 Market St., Philadelphia, Pa.

GRAPE. Origin, Vermt. **Early** as Hartford. Size and color of Catawba. **Good** as Iona. **Keeps** until April. **Dries** into Raisins. **Champion Quince,** hardy, productive, *large, good keeper.* Address F. L. PERRY, Canandaigua, N. Y., for Illustrated Circular, Price of Trees, &c.

1882 NORTH STAR ★ SEED FARMS 1882

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The **earliest** good Sweet Corn in the world, and so recognized by Seedsmen, who place it *always at head* of their lists, thus attesting that great law of Nature, that "*the further north* seeds are grown, the earlier and better their product will be." These are the most northern Seed Farms on this Continent. The principle finds further illustration in our Squaw Corn, Red River Corn, North Star Golden Dent Corn, St. Paul Tomato, Minnesota Amber Sugar-Cane, Red and Yellow Onions, Beets, Carrots, Wheat, Potatoes, Peas, Beans, etc. *Sixth Annual Catalogue now ready—free.*

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Reliable SEEDS

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For 1882.

Send stamp for **R. H. ALLEN & CO's Seed Catalogue.** Address

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now acknowledged to be the best in the country. First-class **Grape Vines** in great abundance. All the reasonable rates with very liberal offers. Address,

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LOVETT'S CATALOGUE

MANCHESTER STRAWBERRY.

CATALOGUE OF THIS BERRY—FREE. **Souhegan and Cuthbert Raspberries.** SPECIALTIES. 13 New Grapes, Hybrid Pears, &c. **Lovett's Small Fruits** are the best. The Catalogue, richly illustrated (colored plates) tells how to get and grow them. The MOST BEAUTIFUL and USEFUL Small Fruit Catalogue ever published.

J. T. LOVETT, Little Silver, N. J

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Will be ready in February, with a colored plate. It is full in really good and beautiful Plants, New Dracænas, New Crotons, New Roses, New Pelargoniums, &c., with a rich collection of Fine Foliage and other Plants, well grown and at low prices; Free to all my customers, to others 10 cts., or a Plain copy free.

Catalogues of Roses, Seeds, Fruit trees, Orchids, &c., free.

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CARNATION PINKS

Strong Healthy Plants, *Clove-scented,* all labeled, *sent safely by mail,* in colors of *White, Carmine, Rose, Yellow, Scarlet, Variegated,* etc.
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Extra Choice Varieties, 4 for 50c. 8 for $1.
ILLUSTRATED DESCRIPTIVE PRICED CATALOGUE FREE.

SINGLE TUBEROSE Orange-Flowered. This is the most hardy, surest to bloom, and deliciously fragrant of all Tuberoses. To all who send **15c.** and address, I will *mail* **2** flowering bulbs, with full directions for blooming. **Double Pearl** same price. CHAS. T. STARR, Avondale, Chester Co., Pa.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in a German Edition. It is the chief and best German Journal of its kind issued in this country. Our friends can do good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language. Those who employ Germans will find that Edition a most *useful* and acceptable present.

Bound Copies of this Volume (40) are now ready. They are neatly bound in our uniform style, cloth, with gilt backs. Price at the office, $2. If sent by mail $2.30. We can usually supply, at the same rate, any of the 24 previous volumes, or from volume 16 to 40 inclusive. Any *ten* or more volumes, in one lot, will be supplied at the office for $1.75 each; or be forwarded by mail or express, carriage prepaid, for $2 each.

Terms to New South Wales, New Zealand, Australia, Europe, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates (postage included), see page 90, and reckon the shilling sterling at 24 cents.

Pages Worth Studying.—As always, upon the approach of spring work, there is an increased number of announcements from dealers in Seeds, Plants, Implements, Fertilizers, etc., and in this year of renewed activity in all departments, the crowd is greater than ever. To avoid any trenching upon our reading columns, eight extra pages have been added to accommodate our friends, and still a large number of late comers are necessarily left out.—These advertising pages are of great value to our readers as a source of information, and worth studying carefully to learn what is offered, old and new, and by whom. It is equivalent to going to a great Fair, where a multitude of reliable men exhibit what they have to supply. Reading what others say in a business way, and *how* they say it, will usually give one new thoughts and suggestions useful in his own calling. We have excluded many advertisements because not approved, or because from men not known to be, or not believed to be, every way trustworthy.... ☞When corresponding with any of our advertisers, or sending for catalogues, etc., it is well to state that you are a reader of *this* Journal. They will know what *we* expect, and what *you* expect of them as to prompt and fair treatment.

Wooden Stable Forks.—Word comes to us of the loss by a butcher of a valuable horse. The animal was wounded in a hind foot through the carelessness of a boy in the use of a steel fork. Nothwithstanding that the horse was carefully nursed, it died in about two weeks, and the butcher thinks that we should turn his misfortune to good account by suggesting to others that bad the stable-fork been a wooden one, his boy could not bave wounded the horse.

EVERY READER OF THIS JOURNAL IS INVITED TO EXAMINE THE NOTES GIVEN BELOW.

I.

Is there any doubt that it will be **useful** for every family, and every person, everywhere, to get the information presented in the pages of this Journal during a year—in type and engravings?

Intelligent, experienced, practical men, who know, and *know well*, what they talk and write about, are constantly engaged in investigating, collecting, sifting and condensing the *best* useful hints and suggestions to fill the columns.

Besides the Editors, many prominent men, worthy Instructors in Leading Institutions, and others foremost in pushing forward improvements in the industries of our country, send their best thoughts to these pages. Many thousands of dollars are expended on engravings which speak more plainly than words can do.

The reading matter and engravings in this Journal during a single year, would fill half a dozen Books costing an average of $1.50 each.

Is it possible for any one, whatever his occupation, to read a yearly volume without getting *many* thoughts, each one of which will in the end be very valuable, directly or indirectly?

For *Illustration*: An eminent Physician, the rules of whose profession forbid his allowing his name to be used, stated recently that "the articles on 'Burns,' and on 'Colds,' in the December number, and the one on 'Keeping Warm,' in the January number, were alone worth the cost of many volumes, to ninety-nine out of every hundred people."

And another worthy, intelligent, successful Physician, on returning the proof of the article on "Catarrh and Bronchitis," given in this number, added a P.S., saying: "In the present popular error on this subject, fostered by advertisers in part, and judging from observation in my wide field of practice among families, this article, if read, will be worth the cost of ten years' subscription to at least half the families in the United States."

To all contemplating settling or investing at the **West,** or sending friends there, the information in *this* number will be of great value as a general guide—worth more than the cost of many subscriptions. It can be found nowhere else so complete, and required much time to gather it, and expense for the extra pages added to give it room.

But the preceding are only five articles out of the hundreds that appear during a year.

II.

In the light of the above, will it not be a *pleasure* to our present Readers, if not even a pleasant duty—a good work—to make some effort to influence friends and neighbors to become readers? A few words will often accomplish the end.

Some will say, "we have all the reading we can use now." But will any other reading supply the *kind* of information given in these pages? Is it not needed by all?

Others will answer, "We can't afford it"—Can they afford to be without it? How many are there who cannot save from other expenses at the rate of 2 or 3 cents a week for such a purpose?

Again: Aside from the directly applicable information in these pages, will not the great majority of people be saved from imposition, from worse than wasteful expenditure and investments, far more than the cost of this journal, by the suggestions continually offered in the Humbug Columns?

The publishers **believe** *they are engaged in a good work in supplying the "American Agriculturist," and urging people to take it. But, while believing this, they cannot go to individuals and present its worth and claims. They therefore invite such of their Readers as agree with them in this, and whose words will be more effective, to do what they can in promoting the desired end, viz., the circulation of good, sound, trustworthy, useful information.* ☞ *This comparatively leisurely month of February is a favorable time for such effort.*

One Suggestion Here: What **better present** for a Son, relative, or friend than to send this journal for a year? Many generous and public-spirited men have, for years past, sent $5, $10, $20, $50, and even $100 for as many copies to be mailed to persons whose addresses they have furnished, believing that they were thus doing a good and useful, semi-missionary work.

BUT,

III.

While presenting above some general reasons for active effort on the part of our readers, the Publishers present also some special reasons in the way of a pecuniary **PROFIT**—amounting really to **Large Pay for Little Work.**

As partially explained before, certain manufacturers and dealers in good articles value the *American Agriculturist* and a place in its *Premium List* so highly that they make *special extraordinary* offers of so many of their articles as the Publishers may desire to give as Premiums to subscribers (confining such offers to *this* purpose). **These Premium Articles are just as valuable to all who want them as so much money.**

By means of these offers, and the use of advertising receipts, without increasing the subscription price or diminishing the value of, or expense put upon the reading pages, the Publishers are able to make Proposals of

Great Advantage to Our Readers.

For example, the magnificent Family Bible is sold everywhere by subscription at $12, and worth it, and is most desirable. This we **present** to any one sending only 13 subscribers to the *American Agriculturist*, at the regular single rate of $1.50 a year. Almost *any one*, young or old, can hunt up thirteen persons who would be greatly benefited by taking this paper, and would do so, if shown its real value to *them*. In this case the One who gathers the names will receive **free of cost,** this great household, Life Treasure. So of many other things, such for example as the

Great Dictionary, **Type Writer,**
Sewing Machines, **Best Lamps,**
Rubber Garments, **Good Pumps,**
Genuine Gold and Silver Articles, **Tea Sets,**
A 1 Plated Ware, **Table Cutlery,**
Wire Mattrasses,

Very excellent Watches,
The Splendid Compound Microscope,
Many Farm and Garden Implements,

and a Hundred other Things,
All Very Desirable,

Useful, and Generally Wanted.

Every Reader of this

Can, This Month, easily get one or more of the above, *without cost,* and at the same time do most valuable service to every one he induces to become a reader.

N. B.—There are Premiums offered for obtaining as few as One (new), Two, or Three Subscribers, and upward.

A full Descriptive List of the Premium Articles (32 Illustrated Pages) will be sent, post-paid, to every Reader not having it, and to any friends designated, on application by Postal Card or otherwise, giving P. O. Address.

BUIST'S PRIZE MEDAL

Garden Seeds

are always **warranted,** being exclusively of our own growth. **Best for the Gardener! Best for the Merchant! BECAUSE RELIABLE!**

They *never fail* to produce the *finest* vegetables, and are planted in all parts of the world. The *constant improvement and care in their growth, extending over a period of more than half a century,* have brought Buist's Seeds to a state of *perfection and reliability second to none.*

BUIST'S GARDEN MANUAL for 1882

(192 *pages of useful information*), mailed for 3c. stamp. Wholesale Price Current for Merchants on application,

ROBERT BUIST, Jr., Seed Grower, Philadelphia, Pa.

Almost **EVERYTHING**

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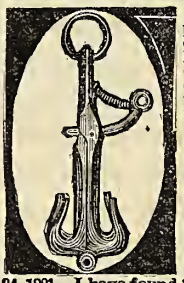

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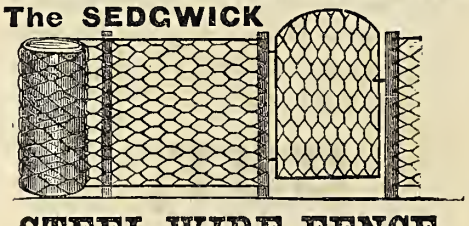

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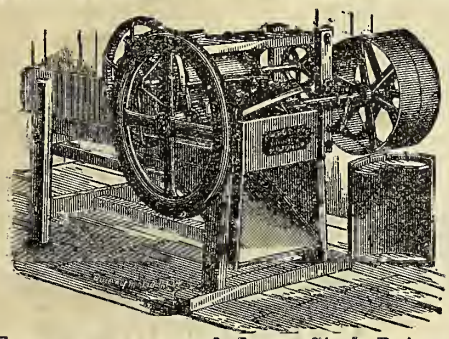

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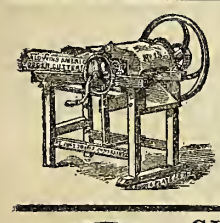

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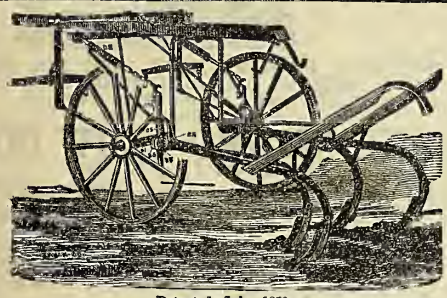

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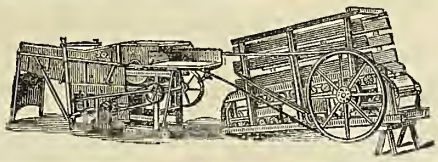

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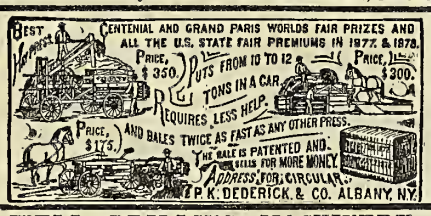

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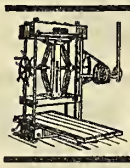

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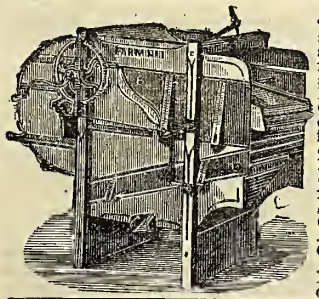

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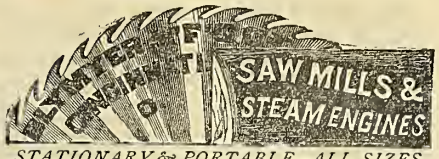

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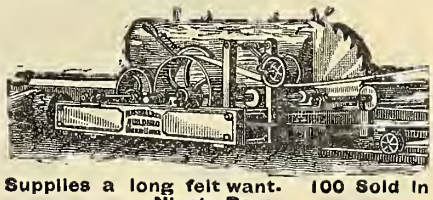

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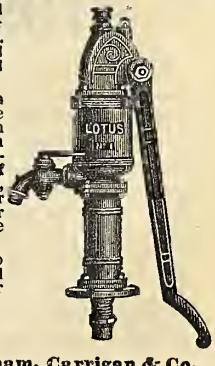

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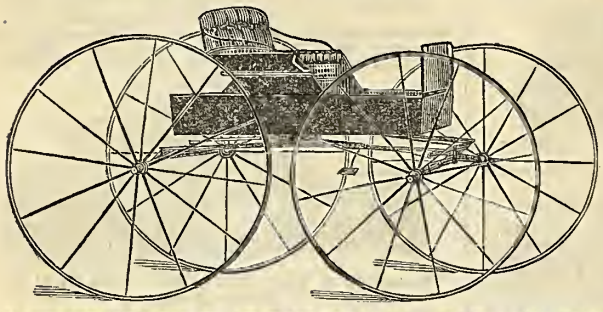

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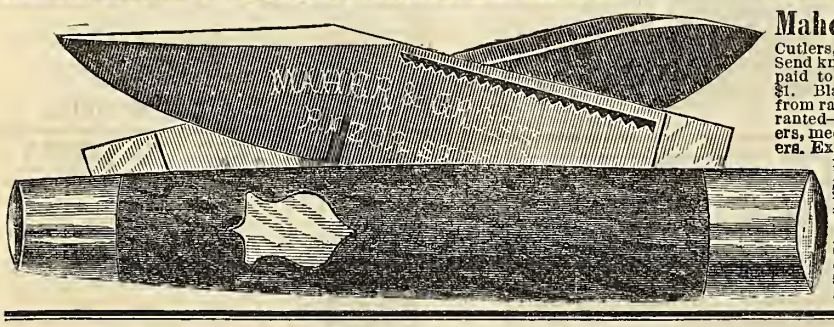

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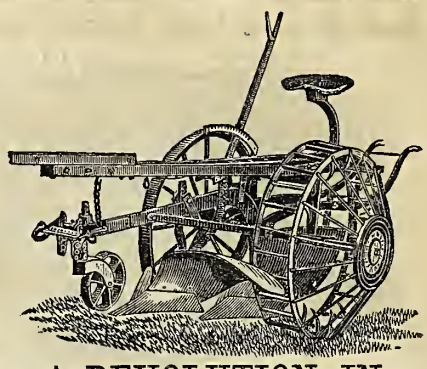

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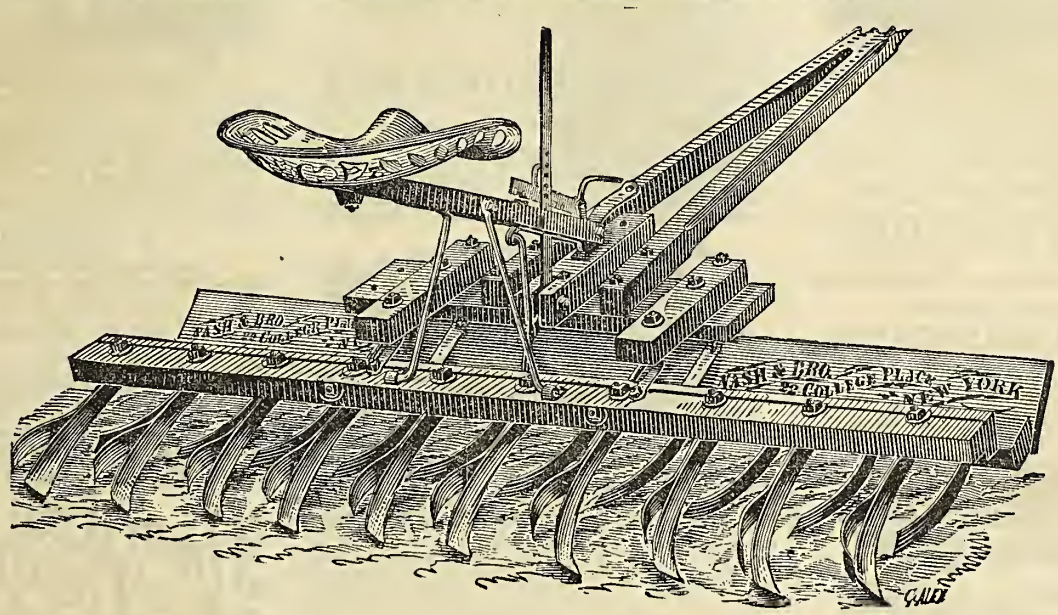

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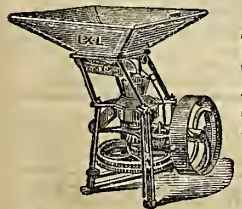

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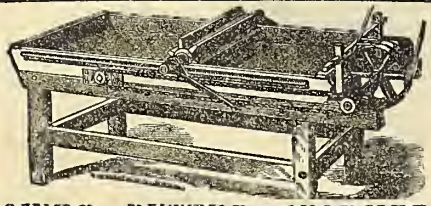

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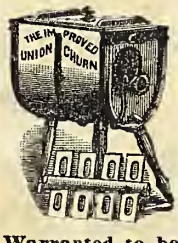

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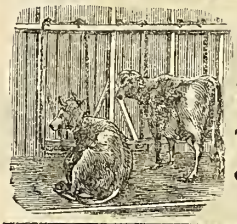

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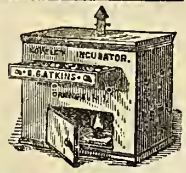

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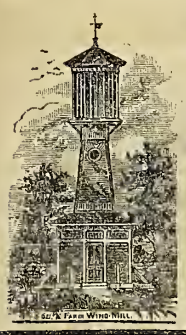

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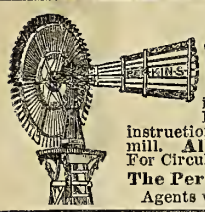

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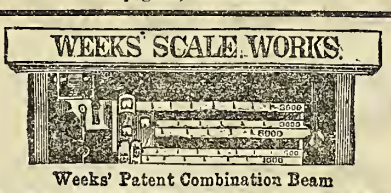

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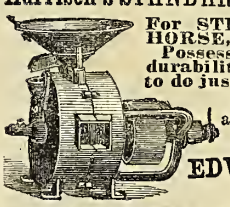

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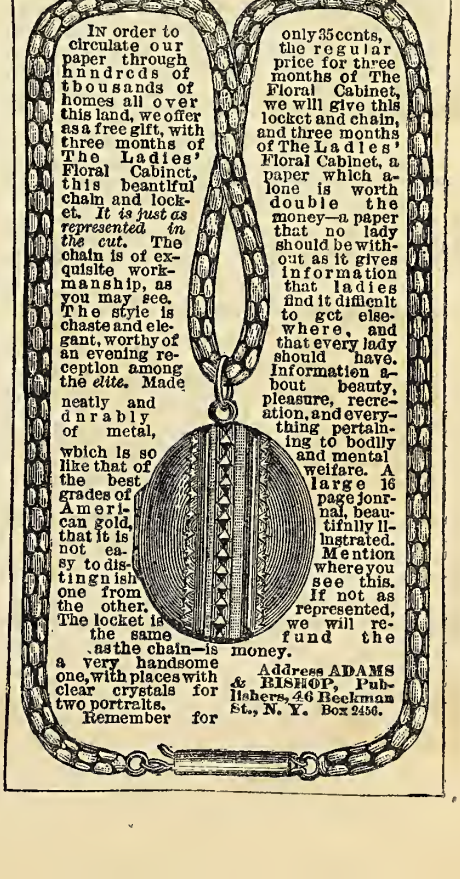

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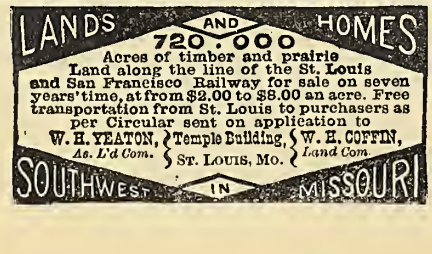

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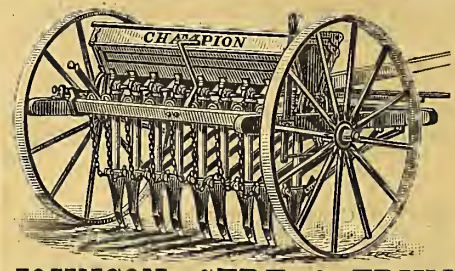

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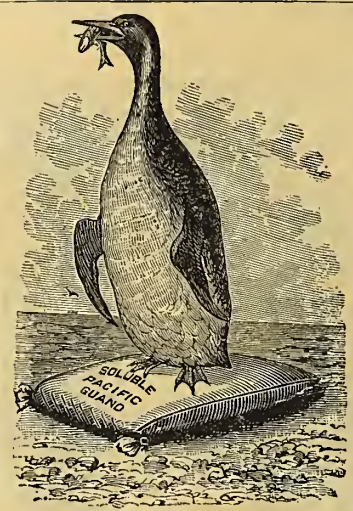

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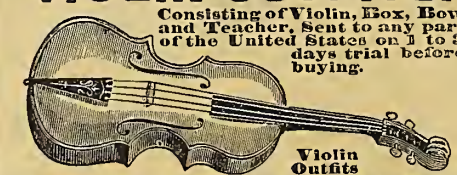

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"WHAT MIGHT HAVE BEEN."

The farmer had set the trap for a fox, but the hungry hawk first espied the bait and fell a victim in its place. Perhaps the gain to the farmer is quite as great as if the fox had been caught, for the boldness of the hawk makes him dangerous to the farmer's poultry. The fox on the other hand is exceedingly wary; it accomplishes its ends by caution and cunning, and is often repelled by the appearance of danger. The artist has shown this peculiarity of the fox in the expression given the animal in the engraving. The hawk is fast, but Reynard is in great doubt, if it be not a bait intended for him. His well-known slyness and caution are evinced in his countenance. In the older States, the bounties, joined to the fact that every farmer's boy looks upon the fox as an enemy, have well nigh exterminated this animal. It is only when pressed by hunger that a hawk can be caught by a trap placed upon the ground. The bird will soar over the barn-yard for the purpose of observation; but if there is a dead tree near by which affords a good view, it will alight there. Taking advantage of this peculiarity, poultry keepers erect poles twenty or thirty feet high, and upon the very tops of these, place small steel traps, set and fastened to the pole by the chain, but without any bait. The hawk, seeing a favorite point for observation, and not having its suspicions aroused by bait, readily alights upon the trap and is caught.

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AMERICAN AGRICULTURIST.

NEW YORK, MARCH, 1882.

Suggestions for the Season.

March is the first spring month, and by this time all the plans for the season's work should be well matured. The farmer who plans little, often does but a small amount of the work that pays the best. He should be fully aware of the importance of being ready for work when the time comes. In some parts of the country there is a homely phrase, "Getting a good ready." It is not scholarly, but very expressive. It really means making thorough preparation, and in doing this there will be men to hire, seeds to provide, implements to buy, and a general overhauling and putting in readiness of all the machinery of the farm. The matter of hired help is an important one, and requires much thought. There is a great difference in hired men; they range all the way from the thoughtful, conscientious man who is as much interested in the success of the farm as if it was his own, to the shiftless, indifferent, and sometimes bad man, who cares for nothing but his pay, and is not fit to have a place on any farm, especially if there are children in the farmer's household. This is a more important matter than many suppose. Aside from the danger to the morals of young people from improper language and acts, a man who is not kind to them has no business on a place where there are children. One of the best workmen we ever knew utterly ignored the children, taking no more notice of them than if they were so many stones. We are not aware that he was ever unkind to them, but the little things soon became afraid to go near him, and would run away whenever he approached. We would not have such a man on the farm. Some men are dear at any price, while others are worth much more than the wages that they are paid. Between these two extremes is the great mass of farm laborers, and it requires more than a passing glance to engage the best men. The farmer who will be particular enough to have only good men about him, will also know that they must be treated as men, and from them he will receive, in return, the thoughtful services of men, instead of the bare labor of their hands.

Several things are to be taken into account in the purchase of the more expensive farm machines, and they are so much of a personal nature that it is impossible for us to answer such questions as to which is the best reaper, or plow, or hay-rake, or harrow, etc.? as many of the reapers and mowers and other farm implements are so near perfection that the buyer cannot go amiss in choosing any one of a dozen of the most prominent. The character of the soil, whether clayey or sandy, level or hilly, will, for example, help to decide which of the various plows is the best. Other things being equal, it is better to buy those farm implements that are made nearest home, on account of the greater readiness with which any needed repairs may be made. There are many implements used upon the farm that an ingenious farmer, one handy with tools, can make for himself during stormy days, and at other odd times. If a corn-marker will be needed, now is the time to make it, and not wait until the field is ready to plant, and be obliged to delay a day in getting a marker. In the same way the shovels, forks, whiffletrees, etc., may be provided in advance of their time of use. A great deal of this work of getting ready should be done in advance, so that when the busy weeks of farm work come, they may be made the most of. Some errors are committed by beginning the regular spring work too soon, in which "the more haste is the worst speed." Much work that is done too soon must be done over again.

In the Notes through the winter months it has been our endeavor to impress upon cultivators the importance of giving proper thought to their work. During the busy season soon to open, the attention to head work will here give place to hints and suggestions that apply to the labor of the hand. By this we do not mean that less thought is now required, but it is not so much a planning for the future as execution of the work on hand that now demands our attention. Winter is the season of peace, in which every farmer should prepare for the war of the summer. The campaign opens this month, and until October we shall be in the field, working out the plans that have been made. Up early and late, the fight for the victory of a great crop in 1882 will go on, and the farmer will not be the only one to rejoice in labors well rewarded. The tiller of the soil can never be too deeply impressed with the importance of his calling, for upon it rests, as upon no other, the prosperity of the nation, and the happiness of each one of our millions of homes.

The Live Stock.

The lack of proper care during the winter leaves the farm stock in poor condition in the spring. Any such animal should be well cared for now. A mess of warm bran-slop daily—a little ginger sometimes stirred in—will be useful for a cow. If calves are infested with vermin they should be freed from these pests at once. A mixture of sulphur and lard, rubbed along the spine and on the brisket, is effective. A tablespoonful of sulphur and molasses, taken internally once a day, will help to drive away the lice; it will also prevent the disease known as "black-leg," frequently found among calves in early spring. Sheep that are suffering from an irritation of the skin and consequent loss of wool, should have a few doses of a mixture of equal parts of Cream of Tartar and Sulphur. Ewes with early lambs should have special favors shown them in the form of dry, warm pens, and rich food. The lambs need to be pushed forward at a rapid pace. A little fresh cow's milk may be given them while they are still quite young. Over feeding of young animals is, however, to be avoided.

The breeding sows should be separated from the others, and provided with dry and warm pens, bedded with cut straw or leaves, and furnished with a fender, or plank fastened to the wall eight inches above the floor, to prevent the young pigs from being crushed. As early chickens are the ones that pay the best, when practicable set all brooding hens, and take good care of all chicks hatched this month. The poultry house should be kept wholesome by frequent sprinklings of plaster or ashes. Kerosene may be applied to the perches if lice or fleas are present. Horses' feet will need attention at this season of the year, when the roads are in bad condition, and there is so much slush and wet everywhere.

Farm Work for the Month.

The surface water should be let off from the grain and other fields before the ground is entirely thawed. All drains require frequent inspection, especially at this time, when the outlets may be clogged by ice and snow. Clover seed may be sown this month. A very even coat can be obtained by sowing upon a light fall of snow on a still day.

There will be larger quantities of artificial fertilizers used this spring, and an application of those of the right kind will in many cases greatly benefit the crops receiving them. As a caution we would say, buy no fertilizer without knowing it to be as represented. These are special and expensive manures, and should be bought of responsible dealers (of whom there are several) and used understandingly.

Notes on Orchard and Garden Work.

We talk about "spring work." But, unfortunately, in this country, we have no spring, at least not the vernal season celebrated in English poetry and prose as the connecting link between winter and summer. If we must forego the vernal season, we can find our compensation in an autumn, the like of which is not known in the Old World. Our transition from winter to summer is usually marked by some days—it may be a week or

two — of the most uncertain and disagreeable weather of the year; then summer at once follows. It is on account of this sudden opening of the growing season that we so often advise the doing of everything that can be properly done, in the fall. Whether one's labor is in the orchard, the vineyard, the fruit garden, or the vegetable or flower garden, no matter how much he may have done the previous autumn, he will find that the work of our brief spring will come upon him suddenly, and that a host of things will crowd themselves upon his attention, and all demanding to be done at once. In the press of work at the opening of the season it is possible to do some things too soon. One is often tempted to put in the plow or spade too soon in preparing the land for early crops. This is a case in which one can follow the old injunction—"make haste slowly." If the soil does not crumble as it falls before the plow or from the spade, but is pasty and is left with a smooth surface, then wait. If the waiting seems too long, consider if drains will not help the matter next year. Another work that is often done too soon is tree planting. We advise the ordering of trees early, and the sooner they are received the better, but they need not be set out too early. In taking up the trees they lose a good share of their roots, and those roots that remain are not yet established and in working order, or, as the gardeners say, "have not got hold of the soil." Many forget that a tree is quite different from a post or a stake. If a young tree is planted and exposed to the drying winds of March, its buds and the bark are seriously affected; drying goes on, and the roots are not yet ready to supply the moisture needed to make up for this loss; hence many really good trees are actually dried to death or seriously injured, and the nurseryman is blamed. It is far better to heel-in the trees until the season of growth is at hand, even if the buds swell somewhat while they are in the trenches, than to subject them to "a struggle for existence" of this kind.

Orchard and Nursery.

In planting an orchard, the ground should be prepared by thorough plowing, manuring, etc., in much the same way as for the sowing of wheat or any other field crop. A profitable orchard requires that much care be taken in preparing the land for the trees. The list of trees to be planted should have been made out before this and sent to the nurserymen, to insure early attention and also the getting of the better sorts, the supply of which may not equal the demand. If the trees arrive before the time for planting, they may be kept with safety by heeling them in, that is, placing the roots in a trench and covering them temporarily with soil. Care should be taken that the labels do not get lost. It is well to separate the varieties and give a stake to each with the name written upon it. It must be remembered that many of the roots have been broken by the removal of the trees from the nursery soil, and the growing trees will have less capacity for absorbing nourishment for some time; therefore the evaporating surface of the top of the tree should be correspondingly diminished. There is no rule to guide in the cutting off of the branches, but it is always safe to cut away one-third of the shoots, and if the roots have been badly broken, more than this may be necessary. There are a number of methods of setting the trees; that which is styled the Quincunx is preferred by many orchardists. By this method each tree is in the center of a circle of six other trees. The method of laying out the Quincunx is given with illustrations in the Notes for March of last year. After the orchard is set, a map should be made on which the position of each tree with its variety is given. The trees in old orchards will need attention; some of them may have broken limbs which should be trimmed away. Girdled trees will need to be banked with earth, or grafts may be used to join the growing layer above the wound with that below. Pruning can be carried on until the sap starts, all large wounds should be covered with a wax made of three parts of beeswax, and rosin, and two parts of tallow melted and thoroughly mixed together. The wax is to be applied in a melted state, and when it hardens a protecting coat is formed. Much good may be done to old orchards by removing the decaying scales of bark that cling to the trunks and larger limbs, at the same time destroying multitudes of the eggs and chrysalides of various insect pests. After the scraping, the trees may receive a washing of a thin, home-made soft soap. Grafting is one of those operations that every orchardist should be familiar with, but a detailed description of it requires so much space that it is not best for us to treat the subject fully each year. Those interested in grafting will find much of value in the Notes for April 1877. The nursery trees that were budded last summer will need attention. All above the bud must be removed that the young shoot may have the whole nourishment supplied by the roots. Cut away the old stock not closer than one-half inch from the new branch.

The Fruit Garden.

We trust that many fruit gardens will be started this spring. Select a warm piece of ground conveniently near the house for gathering the fruits and protection from trespassers. The soil should be rich, deep, and mellow; in short, a fruit garden should have the best soil that can be found. A list of the best sorts of grapes, raspberries, blackberries, strawberries, currants, and gooseberries has been given in the Notes for last month, so that the selections might be made early, and the desired plants ordered in time to receive the best attention from the nurserymen. The planting is to be done so soon as the ground is settled. Blackberries and raspberries start very early, and it is best to set them in the fall, but very early in spring will do. The canes that grow this year will produce the fruit next season. Every farmer should grow all the grapes the family requires, and for this it is not necessary to have a large vineyard. A few vines well kept in some out-of-the-way place will bring large returns for care bestowed upon them. Grapes need a good soil and attention in pruning. If one has no grape vines we should advise him to get a few this spring, and then take care of them. Regarding the care of the vines we intend to give full information as the season progresses.

The Kitchen and Market Garden.

The cold frame plants, that is, those that were wintered in frames should go into the garden as soon as the soil is fit to work. The cabbage, cauliflower and lettuce are the three leading kinds of plants that are kept in frames, and planted out early. The plants may be hardened in the frames by taking off the sashes at all times during the present month, when the weather is not cold enough to chill the plants. In market gardens where a strict economy of the ground is of great importance, the lettuce is planted between the rows of cabbage or cauliflower. The ground should also be heavily manured—as high as 75 tons of fine stable manure per acre may be used—after which the land is marked out in rows about two feet apart, and the cabbage plants set 18 inches apart in the rows. The lettuce plants may be set one foot apart between these rows. The sowing in hot-beds and window-boxes needs to be done about six weeks before it is time for the young plants to go into the open ground. The *hardy* plants are the ones first to be considered in spring gardening, and all those the seeds of which can be sown "as early as the ground can be worked," come under this class. Of these are Beets, Carrots, Cabbages, Cress, Cauliflower, Celery, Lettuce, Parsley, Parsnip, Onion, Pea, Radish, Turnip, and Spinach. The *tender* sorts can not go into the ground with safety until the soil is well warmed, or to follow the old rule, not until "about corn-planting time," which is a safe guide in all parts of this country. Among the tender garden plants are: Beans, Cucumbers, Orka, Pumpkins, Squash, Tomato and Melons of both kinds. Some of these tender sorts may be started with great profit in the hot-bed or window, as for example the Tomato, but all frosts should be over before the plants are set in the garden.

New varieties of vegetables are offered every year, and there is a great temptation to the novice to use them largely. It is a mistake to rely upon them for the main crop, instead of the old and well tested sorts. It is well to experiment to some extent with the new kinds, but it should be with a view to pleasure rather than profit.

Everything should be in readiness for the coming busy weeks of spring; all the implements should have been put in good working order, and if necessary new ones bought. A good seed-sower will save more than its cost in a large garden the first year. The pea brush and bean poles can be best procured before the leaves start. The potato bug may be expected, and all should be prepared to meet this pest. The white butterfly is the parent of the cabbage "worm," and killing it is the shortest way to destroy this trouble in the garden.

The Flower Garden and Lawn.

A top-dressing of fine, well-rotted manure will do the old lawn much good. Care should be taken, that there be no weed seed in the fertilizer applied. Ashes, guano, fine bone meal and nitrate of soda, are all excellent for a lawn, and they bring on no seeds of troublesome weeds. New lawns should be made as early in the spring as possible, that the grass may get a good start and protect its own roots during the hot months of summer. Red-Top is best for light soils, and Kentucky Blue-Grass for those of a clayey nature; a little white clover may also be added. The seed should be sown liberally as a fine turf only comes from thick seeding. Not less than four bushels to the acre should be sown. If walks or drives are to be made, bear in mind that a walk that is cheap in the beginning is always unsatisfactory and dear in the end. Make sufficient excavation and use large stones at the bottom with smaller ones near the surface, to make a solid foundation. Some of the ornamental trees may be planted early; the evergreens may wait until later.

Greenhouse and Window Plants.

As the warm days of spring approach, the insect pests will multiply more rapidly, and greater care will be required in keeping them in check. Thorough washings will kill the Red Spider. The Mealy Bug is best destroyed by hand picking. Abundant fresh air will be needed, and an occasional fumigation with tobacco. The bulbs brought into heat will soon produce flowers. The propagation of bedding plants should be going on. Seeds of plants to go into the open borders may be sown in boxes and given plenty of heat.

Bee Notes for March.

In the southern part of the country, in fact, well up into Ohio, Indiana, etc., bees will have commenced work in earnest by the first of March. Until they can commence to gather pollen, their flight, for the most part, does only harm, and should be restrained as far as possible, without irritating them. Thus bees in the cellar should be kept there, and those out-doors may often be kept in the hives by shading the entrance. This is no small advantage, especially during the raw windy days, when the only result of flight will be evil, as the bees can gather nothing, and many that venture out will be borne far away by the wind, and be unable to return to the hive. In localities north of Central Ohio, bees will commence to store pollen about the first of April and up to the 10th. As soon as the bees can find pollen they may be carried out of the cellar, and by feeding a little every day to each colony, we may hasten on the brood-rearing, which is now the important work. As the bees commence to brood, they will consume a great deal of honey, and we must take care that they do not fall short of stores. Many times they will have enough honey in the hives to carry them through the cold part of winter, when, if properly cared for, they eat but very little, but not enough to last through the early spring. Feeding a little each day, of honey or sugar syrup, will prevent starvation, and farther

than this it will insure more rapid brood-rearing, and consequently greater returns, during the coming season.

In winter, even under the most favorable conditions, many of the old bees will die and fall to the bottom of the hive. All dead ones should be brushed away on the first warm day of spring, when the bees are permitted to fly. If movable bottom boards are used, we have only to raise the hive, and brush the bees aside. If the bottom board is nailed fast, the frames and bees should be transferred to a clean hive. In removing hives from the cellar or winter house, let each colony be placed just where it was the previous season. Otherwise some bees may fail to return to the hive, after they fly out, and be lost. In spring some colonies may be very weak, with only enough bees to cover one or two frames. In such cases, crowd, by use of a division board, all the bees on one or two combs, and cover warmly. Add more frames as they increase. By this practice, the writer, in many years' experience, never lost a single colony by "spring dwindling." The above caution is very important. We ought not to expect that a mere handful of bees should be required to keep a whole hive warm?

Bee Pasturage.

From the middle of March, and even earlier, in the far South, to the middle of April, is the time to attend to special planting for bees. As well remarked by Mr. Coffinberry at the National Convention, no subject connected with apiculture is more deserving attention. If each colony of bees in the four to six weeks of storing can give 100 lbs. of honey to the apiarist, what might be expected, could they be kept at work the whole season through? The great fall yield from autumn flowers, in Michigan and some other States, suggests the answer. The past season, in some sections, the autumn yield was more than all the rest of the crop. Yet such men as Doolittle, L. C. Root, and others, if we are rightly informed, get no autumn yield at all. Surely this matter of providing plants for bee pasturage is worthy of consideration.

Road-side tree planting is attracting much attention at the present time. Dr. Warder, of Ohio, and others, are giving the subject their best thought and study. The Legislatures of some States encourage tree planting by appointing "Arbor days"—days set apart for tree planting, and even by granting homesteads, and exemption from taxes to those who will devote time to this important work. Why do not bee-keepers see to it that the valuable Maples, which furnish early pollen and honey, are accompanied by the still more valuable and equally beautiful Bass-wood, and Tulip tree—called Poplar at the South—and in regions where they will do well, the Sour-wood and Judas tree. Would not a little energy secure these trees at least in goodly proportions in the road-side tree planting? No trees excel in beauty the Bass-wood and Tulip-tree, and the great amount and excellence of the nectar which they furnish is well known. It is wise in the matter of bee food, as elsewhere, to add as many "strings to one's bow" as is possible.

Every bee-keeper may well see to it that waste places along road sides by Railroads, etc., are covered with Figwort, Rocky Mountain Bee Plant, Spider Plant, Catnip, Motherwort, and Melilot, or Sweet Clover This last is a most valuable honey plant, but some of our farmers object to it as a troublesome weed. How is this? Many who have tried it say it is not troublesome in the least. If a pest, why did Prof. Thorn, of the Ohio State University, recommend it lately as a good forage plant, and as very desirable for green manuring?

Bee-keepers should also try to get farmers to sow Alsike Clover, even if they have to furnish the seed. It will pay both parties largely without doubt. The Mammoth Red Clover is also a good bee plant.

As all bee-keepers well know, nearly all our plants fail in times of drouth. True the Mustards and Borage yield some honey, but not bountifully. Why should we not try to introduce the famous White Sage of California? This plant owes its very existence to its power of resistance to drouth. We may try if it can be grown in the East, and what the result will be in yield of nectar.

Let me urge bee-keepers not to allow the spring to pass without an effort to do something in the way of culture of special honey plants.

A Farmer's Experiments with Fertilizers.

BY PROF. W. O. ATWATER.

The fertilizer experiments described from time to time in the *American Agriculturist* have now been carried on during five years, by farmers, professors in agricultural colleges, and well-known experimenters in all parts of the country. From a large number of the reports of the experiments of 1881, I select one by Mr. Fairchild as an illustration of what an earnest, intelligent farmer may do. By these experiments Mr. Fairchild has put several direct questions to his soil, such as: 1st.—Do crops on my land demand more Nitrogen, or Phosphoric Acid, or Potash, than the soil supplies? 2d.—In what quantities, forms, and methods, can I apply these fertilizing elements with profit, and which of them with the most profit?

This was done by applying to accurately measured plots, carefully weighed quantities of the different elements, singly and in various combinations, and noting the results, as partly indicated in the table herewith.—The fertilizers supplied *Potash* in Muriate of Potash; *Phosphoric Acid* in Superphosphate (dissolved bone black); *Nitrogen* in the Nitric Acid of Nitrate of Soda, in the Ammonia of Sulphate of Ammonia, and as Organic Nitrogen in dried blood; as well as in Peruvian Guano, which furnishes Nitrogen in several forms of combination; and finally these and other ingredients combined in ashes and in different farm manures.

Mr. Fairchild had for three years experimented with various materials and mixtures, including the "*American Agriculturist* Set" of eight, which several hundred farmers have tried in all the States east, and in some west, of the Mississippi, and in Canada.—In 1880 he undertook a series of "Special Nitrogen Experiments," (described in this Journal, March 1881). He had already found that Phosphoric Acid and Potash brought profitable returns, but on what crops and to what extent Nitrogen would be advantageous seemed less certain. He selected an old "worn out" pasture, laid out 25 plots of one-twentieth of an acre each, and applied the fertilizers as shown in the table.

The first seven (1 to 7) of the series of fertilizers were essentially the same as the "*American Agriculturist* Set." Starting with the "Mixed Minerals" of No. 6 (consisting of Superphosphate, and Muriate of Potash, but containing no Nitrogen), in the succeeding numbers Nitrogen was added in different amounts and combinations, as shown in the table, which by the way tells a great deal in small space to all who study it carefully. By using the same fertilizers on the same plots year after year, through his regular rotation, Mr. F. is gaining definite information as to the effect, the cost and profit, of the more expensive ingredients of the fertilizers used, particularly of the Nitrogen.

Mr. Fairchild's Experience, and what he has Learned.

Here is a summary of some of his statements: "....On the whole, Phosphoric Acid in Superphosphate and Bone, and Potash in Muriate, have thus far proved most efficient. At the same time, in many cases at least, I like some Nitrogen also,

EFFECTS OF NITROGENOUS FERTILIZERS.

EXPERIMENTS WITH OATS AND POTATOES IN 1881. BY MR. CHARLES FAIRCHILD, OF MIDDLETOWN, CONN.

SOIL.—Dark Loam, loam sub-soil, moist—had oats in 1877, *rye in* '78, *grass in* '79, *and corn fertilized as below in* '80.

Fertilizers. *Kind and Amount per Acre.*	*Yield.* Oats. Grain	Oats. Straw	Potatoes.	*Increase.* Oats. Grain	Oats. Straw	Potatoes.	*Cost of fertilizers, freight, &c.*	*Pecuniary Result.* Value of Increase. Oats.	Value of Increase. Potatoes.	Gain. Oats.	Gain. Potatoes.
	bus.	lbs.	bus.	bus.	lbs.	bus.	$ cts.	$ cts.	$ cts.	$ cts.	$ cts.
0 No Manure	26.9	1,189	28.0	..	..	..	..	..	..	..	..
1 Nitrogen Mixture, 150 lbs.	38.1	1,820	42.0	11.3	627	13.3	6.00	9.75	9.98	3.95	3.98
2 Superphosphate, 300 lbs.	33.8	1,800	56.0	6.9	607	27.3	6.00	7.42	20.48	1.42	14.48
3 Muriate of Potash, 150 lbs.	31.3	1,720	60.0	4.4	527	31.3	3.75	5.50	23.48	1.75	19.73
4 Nitrogen Mixture, 150 lbs., and Superphosphate, 300 lbs.	51.9	2,660	94.7	25.0	1,467	66.0	12.00	22.55	49.50	10.55	37.50
5 Nitrogen Mixture, 150 lbs., and Muriate of Potash, 150 lbs.	42.5	2,160	68.0	15.6	967	39.3	9.75	14.40	29.43	4.65	19.73
6 Sup. Phos., 300 lbs., and Mur. Pot., 150 lbs., "Mixed Minerals"	33.8	2,280	90.7	6.9	1,087	62.0	9.75	10.30	46.50	0.55	36.75
7 Mixed Minerals (as No. 6), 450 lbs., and Nit. of Soda, 150 lbs.	54.4	3,500	124.7	27.5	2,307	96.0	15.75	28.97	72.00	13.22	54.25
8 Mixed Minerals, 450 lbs., and Nitrate of Soda, 300 lbs.	59.4	3,860	138.7	32.5	2,667	110.0	21.75	33.88	82.50	12.13	60.75
9 Mixed Minerals, 450 lbs., and Nitrate of Soda, 450 lbs.	59.4	4,380	120.0	32.5	3,107	91.3	27.75	36.52	68.40	8.77	40.65
6a Mixed Minerals (as No. 6), 450 lbs.	36.3	1,760	94.0	9.4	567	65.3	9.75	8.56	48.98	1.19.	39.23
00 No Manure	27.5	1,280	122.7	..	..	..	..	..	..	..	..
10 Mixed Minerals, 450 lbs., and Nitrogen Mixture, 150 lbs.	51.9	3,140	144.7	25.0	1,947	94.0	15.75	25.43	70.50	9.68	54.75
11 Mixed Minerals, 450 lbs., and Nitrogen Mixture, 300 lbs.	55.6	3,380	144.7	28.8	2,187	116.0	21.75	28.93	87.00	7.18	65.25
12 Mixed Minerals, 450 lbs., and Nitrogen Mixture, 450 lbs.	59.4	3,780	110.0	32.5	2,587	116.0	27.75	33.40	87.00	5.65	59.25
6b Mixed Minerals (as No. 6), 450 lbs.	33.8	1,760	135.3	6.9	567	81.3	9.75	7.18	60.98	2.57	51.23
13 Mixed Minerals, 450 lbs., and Sulphate of Ammonia, 225 lbs.	61.9	3,700	134.7	35.0	2,507	106.6	21.75	34.29	79.95	12.54	58.20
14 Mixed Minerals, 450 lbs., and Dried Blood, 450 lbs.	53.8	3,080	133.3	26.9	1,887	106.0	21.75	26.16	79.50	4.35	57.75
15 Peruvian Guano, 450 lbs., and Muriate of Potash, 150 lbs.	54.4	2,980	96.0	27.5	1,787	104.6	21.75	25.85	78.45	4.10	56.70
16 Mixed Minerals (as No. 6), 450 lbs.	35.0	1,760	29.3	8.1	567	67.3	9.75	7.87	50.48	1.88	40.73
000 No Manure	26.3	1,120	54.0	..	..	..	..	..	..	..	..
A Bone, 150 lbs	31.3	1,680	74.0	4.4	487	25.3	3 00	5.33	18.98	2.33	15.98
B Bone, 150 lbs., and Muriate of Potash, 100 lbs.	35.0	1,960	..	8.1	767	45.3	5.50	9.07	33.98	4.57	28.48
C Same as **B**, and Sulphate of Ammonia, 100 lbs.	45.6	1,980	..	18.8	787	..	10.75	15.03	..	4.28	..

Explanations.—*The Object* of these experiments was to test the effects of *Nitrogenous* Fertilizers, in different amounts and combinations, upon the growth of the plants.... *The Fertilizers.*—The ingredients and amounts of the fertilizers are such as are in ordinary practice, Phosphoric Acid and Potash being supplied in about the proportions that occur in a corn crop of 50 or 60 bushels, and Nitrogen in one-third, two-thirds, and in the full amount in the same crop. Thus the 300 lbs. of Superphosphate furnished about 48 lbs. of Phosphoric Acid: the 150 lbs. of Muriate of Potash about 75 lbs. of Potash.... *Forms of Nitrogen*—The Nitrogen was supplied as Nitric Acid in Nitrate of Soda; as Ammonia in Sulphate of Ammonia, and as Organic Nitrogen in Dried Blood, and in a mixture of these in equal parts in "Nitrogen Mixture."... *Quantities of Nitrogen.*—The Nitrogen was applied at the rate of 24 pounds per acre in "one-third ration," Nos. 1, 4, 5, 7, and 10: 48 pounds per acre in "two-thirds ration," Nos. 8, 11, 13, 14, and 15; and 72 pounds per acre in "full ration," Nos. 9 and 12.

General Plan of Experiment.—Nos. 1 to 6 are "partial" fertilizers, furnishing the ingredients each by itself, and two by two, thus testing their effects separately and the capacity of the soil.—Nos. 6, 6a, 6b, and 16, "Mixed Minerals," are duplicates, each furnishing Phosphoric and Potash (with Sulphuric Acid and Lime).—The others, from 7 to 15, are "complete fertilizers," each consisting of the "Mixed Minerals," with Nitrogen added in "one-third," "two-thirds," and "full ration," as above.—The plots were parallel strips eight square rods each. In 1880 corn was planted over the whole field. In 1881 the whole was divided into halves by a line crossing the plots, and one half devoted to oats and the other half to potatoes. Mr. Fairchild proposes to follow with wheat and grass, thus running the experiment through a regular rotation of several years, the same fertilizers being applied to the same plots year after year, while the crops succeed each other, as in his ordinary farm practice. The cost of the fertilizers includes $5.00 per ton for freight and applying. Potatoes are estimated at 75 cts. per bushel, oats at 55 cts., and oat straw at $12.00 per ton, which are fair rates for the region and season.

and think a 'complete fertilizer' is the most profitable for me."—That is, one containing Nitrogen, Potash, and Phosphoric Acid.

"....As to the outcome of my experiments with Nitrogen, that depends upon soil and crops....In my experience thus far, Nitrogen in small quantities has generally proved profitable. Bone and Potash give a moderate yield of corn and oats on very poor land, but I like a good, handsome crop, and 24 lbs. of Nitrogen added, has more than repaid the cost in increased yield of corn and oats. That is, mixtures containing 'one-third-ration' of Nitrogen have been uniformly more profitable than 'Mixed Minerals' alone, or than mixed minerals with a two-thirds or a full ration of Nitrogen; and this is my experience on a larger scale."

"Yet in a number of cases Potash Salts with Bone, and also with Superphosphate, bring excellent crops without Nitrogen, and the addition of Nitrogen would be unprofitable."

"My neighbor, Mr. Williams, had a very fine piece of corn this year, with only 200 lbs. per acre of Bone Dust, and 150 lbs. of Muriate of Potash, the two costing $7 per acre. I have noted quite a number of similar cases in this district. But my land was very badly run out when I took hold of it, and seemed to demand a little Nitrogen. So far as I have observed, soils that have been well manured, seeded down, kept in grass awhile, and then plowed again, do well with Potash and Phosphoric Acid, without artificial supply of Nitrogen. My corn in last year's Nitrogen experiments, rose with the amount of Nitrogen added, but the increase was not enough to pay the cost of the 72 lbs., or even of 48 lbs., though it did pay for the 24 lbs. And with the oats on the same plots the past season the yield rose with increase of Nitrogen, but the smallest quantity was the most profitable, as you can see by comparing Plot No. 7 with Nos. 8 and 9, and No. 10 with 11 and 12."

"But the potatoes gave a better response to the Nitrogen than the oats. With them the two-thirds ration, 48 lbs. per acre, was the most profitable, and the value of the increase exceeds the cost of the fertilizer; with 48 lbs. of Nitrogen, the gain was $57 to $65, while with either 72 lbs. or 24 lbs. it runs from $40 to $59. I notice also as a result of my experiments that the potatoes seem to respond to the Potash much more readily than either oats or corn."

Mr. Fairchild's Formulas.

To my question, "Have you arrived at any formulas as most suitable for fertilizers for your crops?" Mr. Fairchild answered as follows:

"Yes and no. That is, I have made up my mind what will probably do well on my land and under my conditions for some of my crops. But I can not say what would be most advantageous elsewhere, nor do I yet know exactly what will prove best for me years hence, or with crops I have not tested. For my corn next year I expect to use 250 lbs. of fine Ground Bone, 150 lbs. Muriate of Potash (containing 50 per cent actual Potash), and 24 lbs. of Nitrogen in the cheapest form I can get it. So far as my experiments go, they indicate that Sulphate of Ammonia and Nitrate of Soda do rather better than Dried Blood. Nitrate of Soda is cheap now, and I rather expect to use that."

"With potatoes and oats I have not experimented so much. Judging from the past season's experience, it seems probable that the above quantities of Bone and Potash Salt, and about double the Nitrogen will make a good mixture. For oats I am inclined to make use of the same proportions as for corn, but I think smaller total quantities would do upon these crops. According to analysis an oat crop takes less from the soil than one of corn."

The Hungarian Brome-Grass.—"M. V. M.," Orange Co., N. Y.—We have seen the accounts in the French agricultural journals to which you refer, and should we live long enough expect to see many others. There are several grasses, of which this is one, that every now and then come into notice on a small wave of praise, and then disappear to come to the surface again a decade or so after. This "Hungarian Brome-Grass," or "Brome de Hongrie," is *Bromus inermis*, the "Unarmed," or "Awnless-Bromus," is a native of Germany and other European countries, and though it has been occasionally tried, it has never gained a position as a meadow or pasture grass. Sinclair said of his trials with it half a century ago, that they "offer no grounds on which to commend it to the notice of the agriculturist." The roots, or rather root-stocks, of this are barely inferior to the Quack or Couch Grass in their far-spreading reach and their aggressive character. This enables the grass to endure severe drouths, but its herbage is coarse, and like that of other species of Brome-Grass, not especially nutritious. Like the wonderful "Brome de Schrade," that some 15 years ago was to renovate French agriculture, it is likely to amount to little.

Farmer's Hot-Bed—Boxes.

"L. A. G." asks us: "Will a hot-bed pay a farmer with a small garden?" If he has had experience in the management of one, and will give the needed time to the care of it, and can find a sale for the plants he does not wish to use himself, he can no doubt make it a source of moderate profit. But if the care of a hot-bed will take time that can be better employed otherwise, it is not worth while for him to make one for the sole purpose of supplying his own garden with plants. It is better to buy the few needed plants, or better still, raise them in window-boxes. We have often referred to these, but their utility does not seem to be generally appreciated. They allow one to provide all the plants of early cabbages, cauliflowers, tomatoes, or whatever would be sown in a hot-bed, which are needed in an ordinary garden, at no expense in money and very little time or care in labor. Boxes are readily procured at any country store; as the window-box used be only three inches deep, an ordinary box may usually be sawed in two, using the top for the bottom of the upper half. These are to be nearly filled with light, rich soil, in which the seeds are to be sown, and kept in a sunny kitchen window. When the plants show the rough leaves, *i. e.*, the leaves that follow the seed-leaves, they are to be transplanted to other boxes and given more room. Some manage by the use of old tomato and oyster cans to raise a supply of plants. It is an easy matter, if there is some one in the family who will give the needed attention, to thus have an abundance of plants for the family garden.

Oil-Cake and Linseed Meal.

Several inquiries show that many suppose these articles to be the same. Linseed Meal is properly the Flax-seed or Linseed merely ground, and contains all the oil of the seeds. It is rarely, if ever, employed as cattle food, but is sold in the drug stores as a material for making poultices. Oil-cake is the residue left after Linseed has been subjected to a hydraulic press, for the purpose of removing the oil, so largely used in painting. The seeds contain about 33 per cent of their weight of oil, but the presses do not remove all this, and there remains from 10 to 13 per cent of oil in the residue, or Oil-cake. The Oil-cake, as it comes from the press, is very solid and difficult to break up; in England hand mills are made for grinding it, but in this country it is often sold in the ground state. The proper name for this ground product is Oil-cake Meal, to distinguish it from Linseed Meal, the ground unpressed seed. A correspondent in Guernsey Co., Ohio (his address not being legible, we cannot answer some of his questions), asks how Oil-cake Meal compares with corn for feeding stock. The two are fed for such opposite reasons that a comparison can not be readily made. Corn abounds in carbohydrates (starch, etc.), containing an average of 75 to 80 per cent, and only 8 to 15 per cent of Protein (nitrogenous matters). Oil-cake, on the other hand, has over 30 per cent of Protein, and only about 37 per cent of carbohydrates (exclusive of the oil). Oil-cake is regarded as a very rich food, and is used to mix with coarse fodder to increase its nutritious quality, and to make it equal to good hay, and is often used to feed to fattening and to milk-giving animals.

183 House Plans—Prize Plans.

In December Nine Prizes (three each of $50, $25, and $15), were offered for best plans for Farm Houses, in three classes: I, those costing $400 to $1,000; II, those costing $1,000 to $2,000; III, those costing $2,000 to $4,000, reference being had to economy in construction, comfort, facilitating work and saving steps, closets, fair outward appearance, etc., as noted. To our surprise and gratification, no less than 183 different plans were offered, each so completely concealed by the *nom de plume*, that no guess could be made as to the personality or locality of the contributors. The accompanying sealed envelopes were locked up, and the plans and descriptions—almost a wagon load—were given to two competent Judges, who devoted much time during the month of January to a careful examination. After sorting each class down to half, then to a quarter, and finally to the one-twelfth of the whole, esteemed the best, a third Judge devoted several days more, calling in an expert to examine some of the details of estimated cost, when necessary. It was difficult to decide upon the final awards, as there were certain points of excellence and of defects in each. The whole Committee finally came together, and after weighing all points made their decision as below. (It will be seen that in one case the same competitor is successful in two classes. The Judges were quite surprised at this result, as the apparent name, and the penmanship were different in several cases where the same persons competed in more than one class. They were amused to find "Prairie Farmer," and "Dakotan" turn out to be two "Canadians," or one (?) when the envelopes were opened after the prizes were awarded. The Awards were:

CLASS **I.**—Cost, $400 to $1,000.

First Prize to "West,"—(D. S. Hopkins, Grand Rapids, Mich.)

Second Prize to "Poor Man's Dwelling."—(A. C. Swartz, Girard, Kansas).

Third Prize to "Prairie Farmer."—(John Dunlop, South Zorra, Ontario).

Plans next to the above, and in *some* points superior; "Sunny Home" (Mrs. L. J. Woodhead, Chattanooga, Tenn.); "Jackson" (Edward Pratt, Hanover, Mich.); "Ohio Farmer Boy" (D. A. Allen, Ellsworth, Ohio).

CLASS **II.**—Cost, $1,000 to $2,000.

First Prize to "House-keeper's Delight," (A. C. Swartz, Girard, Kansas).

Second Prize to "Circle," (C.R. Crabb, Coxsackie, N.Y.)

Third Prize "Anchor" (H. Fisher, Storm Lake, Iowa).

Plans next to the above, and in *some* points preferable, "White Pin Place" (L. K. King, Knoxville, Pa.); "Mount Union," (A. F. Hilley, Mt. Vernon, Ohio); "Buckeye," (Charles Warren, Jefferson, Ohio).

CLASS **III.**—Cost, $2,000 to $4,000.

First Prize to "Farmer's Wife," (Mrs. Wm. H. Burr, Redding Ridge, Conn.).

Second Prize to "Jackson," (Edward Pratt, Hanover, Mich.).

Third Prize to "Dakotan," (James Dunlop, South Zorra, Ontario).

Almost equal to No. 3, and in some points preferable, is one from "Anchor," (Henry Fisher, Storm Lake, Iowa).

The Committee exercised their best judgment, taking into account all points. No doubt each competitor will differ somewhat in opinion, but that could not be avoided. There were so many good suggestions, finely executed plans, etc., that the Judges would gladly have awarded fifty prizes.

A good many of the plans will appear in the *American Agriculturist*, as space will allow. None of the real names of the competitors are yet known, except those given above, as the addresses are still sealed and under lock and key.

The Editors and Publishers desire to here return their earnest thanks, to each and all of the One Hundred and Eighty-three contributors, who have done their best to aid in improving the Farm Homes of the country. Their work will not be lost or without future influence. It may yet be practicable to present in book or pamphlet form, a much larger number of the drawings and descriptions, than it will be possible to find room for in the pages of the *American Agriculturist* in a long time.

Fig. 1.—PERSPECTIVE VIEW.

Pioneer's House—Costing $250 to $500.

(Cost as Here Shown and Described, $473.).

CLASS I.—FIRST PRIZE—BY "WEST."—(D. S. HOPKINS, GRAND RAPIDS, MICH.)

[On the supposition that people already settled have some kind of a house to shelter them, and intending to continue our series up to a cost of $3,000 to $4,000, or more, we begin by selecting from the 183 plans received, one that will probably meet the immediate wants of the greatest number of the

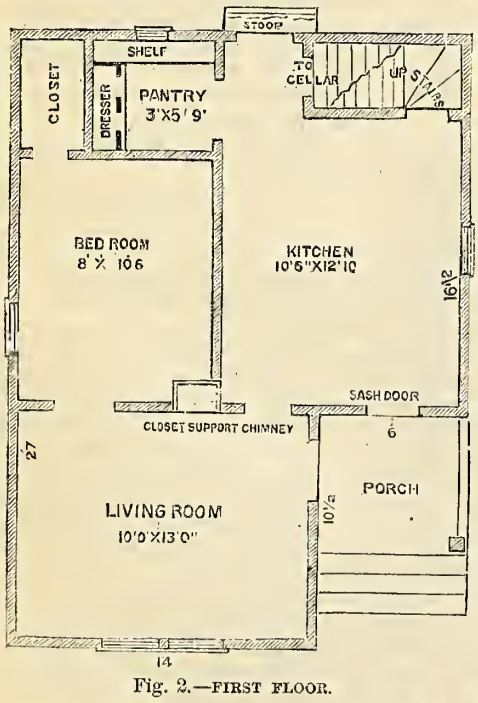


Fig. 2.—FIRST FLOOR.

millions from the older States, and from Europe, who are now rapidly locating in the vast regions of unoccupied territory at the West. The plan here given, if carried out as described, will make a convenient small house of very fair appearance. But by the use of rough covering, simple building-paper walls inside instead of plastering, to be afterwards better covered and plastered, and by other economies, the first cost may be reduced to from $250 to $300. This first, rough method we have seen adopted by multitudes of prairie "homesteaders" in limited or straightened circumstances.

It will be noticed that the construction provides for prairie or other locations where stone or brick are not to be obtained, except from a distance, at large expense. Some omit the chimney, at first, and depend for a year or two upon a simple stove-pipe, carried through an eartheu thimble in the roof. Where stone or brick are accessible, these may be used for the foundation pillars instead of the wooden posts. But almost any kind of wood will last several years, and some kinds for many years. If the least durable wood be used, stone or brick supports can be put in when decay takes place. So, also, the cellar can be fully excavated, and, if need be, walled up when the circumstances of the builder permit.—ED.]

DESCRIPTION.

Elevation (Fig. 1.)—The general plan accords with the usual custom on the broad prairies and other localities exposed to strong winds and hurricanes, viz., to build only a story-and-a-half, and to have the "family bedroom" on the first floor. A very little more expense would give higher rooms in the second story, and another room over the kitchen. The house has a rather pleasant look. Any mechanic of fair ability can vary the gables, and other features, at little or no expense, so as to produce pleasant changes in the appearance.

First Story (Fig. 2).—The size and arrangement of the rooms are sufficiently shown in the engraving. The rooms are planned to save steps and facilitate work. The "living room" serves also as a dining-room and parlor, and is entered from the porch. The chimney, starting 2 feet below the second floor, can be directly reached by a stove pipe from every room. A small closet is placed under it.

Second Story. (Fig. 3.)—This has but two rooms. If there are several small children, the larger room will bear partial dividing with boards, or curtains, or the two rooms be cut into three; raising the side walls two feet higher, would allow this to be done very readily. The small storage room under the lower roof can be reached from the stairs, or by a small door from the larger bedroom.

Cellar and Foundation. (Fig. 4.)—In the absence of stone or brick, or for economy, the sills are to be supported by wooden posts 6 to 6½ feet long, and 8 inches square; or rough logs hewn flat on two sides may be used. They are set as shown in the plan, 4 to 4½ feet in the earth, and about 2 feet above grade. For a small Cellar, begin 2 feet from the inner side of the posts and take out the earth, leaving the sides sloping inwards at an angle of about 45°, according to the kind and compactness of the soil, and deep enough to give 6 to 7 feet below the floor. The posts are to be boarded up on the outside tightly, and lined on the inside with tarred building paper. The paper at all corners is to be turned out upon the posts and secured firmly to them with lath strips nailed vertically over the paper. Then board up on the inside over the paper and fill the space between the walls with dry straw well packed in. With the excavated earth, bank against the exterior and grade off to throw water well away from the building. Provide a small window on each side for light and ventilation. For sills, we use 2x8-inch joists double, and set on edge, 2 inches smaller than foundation, on all sides. Nail 1x2-inch ribs on bottom edge of sills, for joist bearings, and notch joists accordingly....All floor joists are 2 by 8 inches, set 16 inches apart at centers, well spiked in position.

Frame, etc. (Fig. 5.)—For frame siding, boarding, etc., use 2x8-inch plank, 15 feet long of even length on main sides, set perpendicularly flat-ways, the edges close together to make a close wall; spike them to the outside of the sills, the lower ends even with the bottom edges of the sills. Just under the second floor joist-bearing, set a rib 1x6 inches; just above this cut a notch into one edge of every other wall plank for the end of a joist, and spike the joist firmly in. As the upright planks are 8 inches wide, this will bring the joist centers 16 inches apart. At the top of the wall planks, nail on the inside a 1 by 10-inch strip forming a frieze, extending 2 inches above the wall plank. Notch the rafters into this piece so that their top edges will be even with its upper edge, and the roof boards can be nailed to it, thus closing all tightly here. This strip constitutes the plate—The

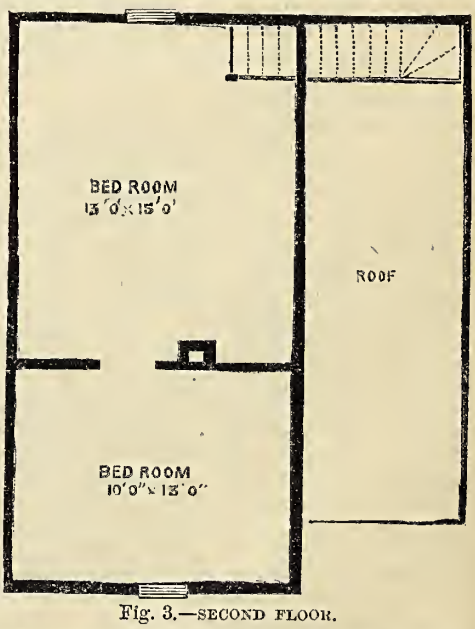


Fig. 3.—SECOND FLOOR.

rafters (and roof) should extend over the side 15 to 18 inches, the ends being tapered and dressed.

The Cornice is formed with roof boards dressed on the under side and outer edge, and nailed upon the bevelled ends of the rafters; gable finished in same manner, with verge boards, as shown. The rafters of 2 by 4-inch stuff, 16 inches apart at centers, with collar beam to each rafter of 2x4 inches. Plank up the gable ends the same as the side walls.

Batten (plain or molded) all joints of planking. Window casings to be set on over planking, all properly flashed over with tin. Frame the porch as shown in figs. 1 and 5.—Pitch floor to front. Lay

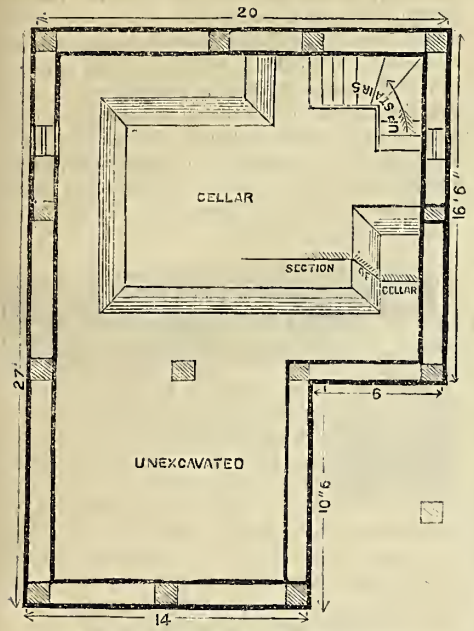


Fig. 4.—FOUNDATION AND CELLAR.

floors, and ceil overhead. Case the corners to form a column. With saw and augur form the Soffit finish as shown. The verge boards are formed in like manner, or to suit taste of builder or owner.

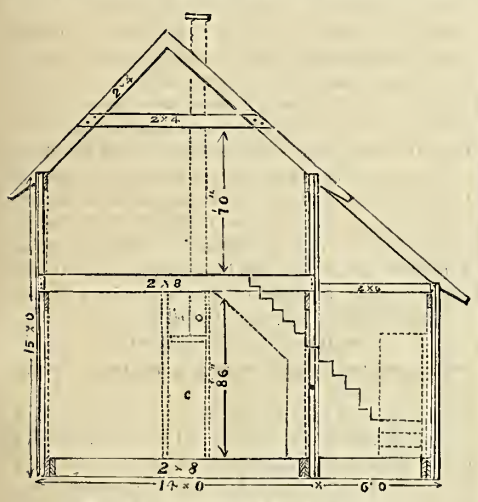


Fig. 5.—SECTION OF FRAME, ETC.

While the house can be built very cheaply by using rough materials, a little extra cost will dress and paint all the exterior to suit the taste, or desire, or means of the owner. It is estimated, after lining the inside with tarred or resin-sized paper, to furr off with 1x2-inch strips, and lath and plaster. Doors paneled. Eight-light windows. Generally plain finish throughout. The several plans, figs. 2 and 3, show the rooms and other interior arrangements.

Estimate of Materials and Cost.

TIMBER AND LUMBER; 12 foundation posts, 6½ feet, 8x8 inch; boards for foundation, 500 feet; ten pieces 10 feet, 2x8-inch; eighteen pieces 16 feet, 8x8-inch; twenty-eight pieces 14 feet, 2x8-inch; eight pieces 12 feet, 2x8-inch; seventy-four pieces 10-feet, 2x4-inch; ten pieces 12 feet, 2x4-inch; thirty pieces 18 feet, 2x4-inch; one hundred and sixty pieces 16 feet, 2x8-inch. Roof boards 500 feet. Battens 2 inches wide (3,000 feet length), 500 feet. 1-inch furring, 400 feet board measure.	
Total 7,989 feet @ $15. per M	$119 83
1,000 feet flooring @ $18. per M	18 00
7,000 shingles at $3.50 per M	24 50
200 yards plastering @ 20c	40 00
10 doors and frames @ $4	40 00
7 windows and frames @ $4	28 00
Base, pantry, closets, etc	15 00
Stairs, $8; chimney $15	23 00
2 coats paint, $60; 3 kegs nails, $12	72 00
LABOR: Excavation and foundation, $15; labor on frame, $30; laying floors, $6; shingling roof, $12; setting doors and windows, $20.	83 00
Sundries, say	10 00
Total estimated cost	$473 33

A Dish of Onions.

Seth Twiggs came home from Shadtown the other day, a good deal elated, with the prospect of growing onions as a special crop for the New York market. "There must be money in it, 'Square Bunker. Ye see, there was a chap at the wharf in his vessel jest over from the Island, peddling out the onions and other truck to the Shadtown grocers. He was selling the Danver's Yellows at $1.00 a bushel, the Wethersfield Reds at 90 cents, and the small ones for pickling at 60 cents a bushel; and they went off like hot cakes. The man said he had raised a thousand bushels on his own land—less than two acres, and sold them for a thousand dollars."

Jake Frink said, "I don't believe any such stuff as that, Seth. Ye see, I've tried time and agin to raise onions, and never could make 'em pay. Sometimes it was tew dry, and agin it was tew wet, and then the weeds got the start, and 'fore I catched up it was September, and the durned things wan't big enuff for pick-els. And then when I did raise ennything, everybody had 'em, and onions was a drug in the market. It won't pay. Depend on't."

"That's so," said Jotham Sparrowgrass. "They must have changed a wonderful sight, ef they've larned to raise onions over on the Island. Sense I left—which, let's see, must be hard on upon thirty year or more—Nat Tuthill tried it, and Ben Miller, and Zophar Mills, and the most I ever heerd of them gittin' was three hundred bushels to the acre, and I never believed they raised that."

The high price of onions this year has made a good deal of talk in Hookertown and vicinity, and the matter has been discussed at the club with a good deal of interest. At a recent meeting David Sherman was in from Millport, and read a statement of the cost of raising 5¼ acres of onions on his farm as follows:—"N. Y. manure, $157.50; rent of dock, $3; carting, $20; spreading, $5; plowing, $23; harrowing and sowing, $27.66; seed at $10 a pound, $240; cultivating in May, $12.67; in June, $56.94; in July, $15.52; August, $22.50; September, $79.50; October, $60.50; rent of store room, $30; cutting and taking to market, estimated, $186.36; interest on land, $99; overseeing work, $100; whole amount of expenses, $1,138.15. As carted into the barn with the tops, he had 1,553 barrels, estimated to shrink in topping less than one-tenth. From the same field he had sold the two previous years 1,169 bbls., and 1,171 bbls." Allowing for shrinkage there would be about 1,400 bbls. on the 5¼ acres, worth about $2.50 per bbl., or $3,500. Deduct cost of raising, $1,138, it would leave $2,362 as the profit upon the crop. The yield per acre is about 254 bbls., or 635 bushels, allowing 2½ bushels to the bbl. The profit per acre is about $429.

In looking over the items of expenses, we meet first the bill for New York manure, $157, or about $30 per acre. This seems quite moderate considering the large yield. But it is to be taken into the account that this plot of land had been highly manured and borne heavy crops for years in succession. The only security for profitable crops is in a liberal supply of fertilizers. It is not uncommon to apply two hundred bushels of Canada Ashes per acre of land when it is first cropped with onions, in addition to the stable manure. These ashes have been partially leeched and are sold at tide-water from canal boats, from 14 to 17 cents a bushel, according to their distance from New York. This would make an item of thirty dollars or more per acre at the outset for profitable onion culture. But such a dressing lasts for many years. Mr. Sherman explained that almost all the manure brought to Millport was stable manure, and came from one party, who made a business of shipping manure. Of course this manure is from grain-fed animals, and is of the best quality. It costs, delivered on the dock, near the farms, 45 cents per dump of seven bushels. The freight paid by the shipper is 20 cts. a dump load to Millport. The cost per cord to the farmer at the dock is about $8.25 cts. per cord of 128 bushels, which is reasonable considering the quality. Street manure is used in small quantity as yet, and its future use will depend upon the results. The use of New York stable manure in this vicinity is of quite recent origin, and in the five or six years since the farmers began to invest in it, it has made a great difference in the amount of produce sent to market, and is likely to make still more, as the farmers increase the quantity and quality of the fertilizers applied to the soil. Without capital to invest in fertilizers, it is of no use to undertake onion culture.

Another point in these items of expenses of cultivation is the thoroughness of the weeding of the crop in May, June, July, and August. It amounts to $107.63, principally the labor of boys, who make good wages in the onion field. As soon as the onion tops are enough in sight to mark the rows, the push hoe, or onion weeder, is started, and every weed that is not destroyed by the tools is pulled with the fingers. Absolute cleanliness is indispensable to success in this crop. Three or four days neglect in the early part of the season is often fatal; the weeds grow so fast, and the richer the soil, and the more favorable the season, the greater is the peril of the onion crop. Those who propose to undertake this crop should understand at the outset that strict attention during the whole period of cultivation is imperative. The weeds are robbers, and must be exterminated without regard to cost. No crop pays better for early and constant attention. Absolute cleanliness will soon reduce the weed crop so as to make it easily manageable. If land, proposed for this crop, is foul with wild carrot, charlock, or other weeds, it will save much labor to keep it fallow one season and clean it by stirring the soil as often as weeds appear, with the harrow or cultivator. One of the chief advantages of keeping ground in this crop for a series of years is the freedom from weeds, which is secured by thorough cultivation. The labor of cultivation is also reduced by the use of manures free from the seeds of grasses and weeds. The New York stable manure generally undergoes fermentation enough to destroy all vegetable life. Marine manures, rock-weed, kelp, and the mosses are quite free from weed seed, and are good fertilizers for this crop. Cultivators back from the shore make considerable use of salt, applying it at the rate of three or four barrels to the acre. This will destroy the seeds of many weeds, and of course should not be applied in the season of onion growth. The next thing that strikes us in this exhibit of cost of crop, is the large cost of onion seed—$240 for 24 lbs.—or ten dollars a pound. This is an exceptional price, on account of the short crop of the previous year. Good seed can generally be had at about one-third of this price. For one engaged in this business, with the convenience for selecting the bulbs for growing seed under his own supervision, it is much the cheapest to grow his own seed, and generally the safest. Failing in this, procure seed of some reliable cultivator who can vouch for the article he sells. Good seed is cheap at almost any price, as successful onion growers will tell you.

This vegetable is a little fastidious about its soil, and feeding. Mechanical condition goes for much if you want maximum crops. A heavy clay soil will not answer at all. The plant starts from small seed, and makes a bulb of two to four inches in diameter by the last of August. It wants an early start, and to this end should have a well drained sandy loam that can be worked the last of March. The sooner after April 1st, in this latitude, the seed is in the better. The seed should be rolled or trodden with the food at planting, quite hard. The delay of sowing is dangerous. The land should be as nearly level as possible to prevent all washing, and to facilitate the labor of cleaning the crop of weeds.—It also must be cleared of small stones, to reduce the labor bills to the minimum. Much labor has to be expended every spring in raking a coarse, gravelly soil to get it ready for the seed. In a smooth, sandy loam, such as is often found in our river bottoms, it is easy to sow the seed in straight lines, and most of the cultivation can be done with the tools specially adapted to this crop. We have then, in short, as a recipe for this dish of onions, three parts good stable manure, and plenty

of it, applied every year; three parts seasonable and thorough cultivation, with no weed allowed to go to seed; two parts good onion seed; one part good sandy loam; and to this must be added cheap freight to a good market. With these conditions, any smart, thrifty farmer can raise onions, and make money. In the neighborhood of Jake Frink and Seth Twiggs some of the conditions are wanting.

CONNECTICUT.

Some New Rural Books.

Insects of the Farm and Garden (In Preparation).—By Mrs. Mary Treat. There is no popular work upon the Insect Enemies of the cultivator suited to the present time. Harris' work, though charming in its popular style, is local, and does not treat of the numerous insects that have appeared of late years. While it will retain its place among the standard works, it does not meet the every-day needs of the farmer and gardener. Packard's "Guide to the Study of Insects" is of great value to those who are more interested in the study of insects and their scientific classification than in their destruction. Prof. C. V. Riley's writings, admirable and practical as they are, are scattered through too many volumes to be available for general use. In view of the need of a compact treatise which shall enable any cultivator to identify the ordinary injurious insects and apply the best means for their destruction, the Publishers have invited Mrs. Mary Treat to undertake the work. Those who remember Mrs. Treat's articles in *Hearth and Home*, and later in *Harper's Monthly* and other periodicals, need not be told of the pleasing manner in which she presents scientific facts. But she is more than a popular writer; as an original investigator she has added much to our knowledge of both plants and insects, and those who are familiar with Darwin's works are aware that he gives her credit for important observations and discoveries. It is but proper to add that Mrs. Treat undertakes the work with the encouragement of Prof. Riley, who has in the most generous manner offered her the use of valuable materials. Orange Judd Company, Publishers.

Sweet Potato Culture.—By James Fitz, Keswick, Va. Nearly all the special crops—by which we mean those not usually included in the farm rotation, have had their culture described in separate treatises, save the Sweet Potato. This lack is now supplied by Mr. Fitz, who, residing in a locality where this crop is one of importance, is able to give the methods followed by those who have attained the best results. While the Sweet Potato is grown to the greatest perfection in certain tide-water localities in Virginia, it may be made a profitable crop much farther north. Within the recollection of many the cultivation of the Sweet Potato was not thought possible in the States north of Virginia, but with the introduction of early varieties and improved methods of treatment, its culture has gradually extended northward, until in all but the northermost localities, the Sweet Potato, instead of being an occasional luxury, is now a common food.

There are but comparatively few localities in which the farmer can not readily raise a full supply for family use, and the work under notice will do much to promote this result, as it gives every step, from producing the sprouts or "sets," to the harvesting and storing the crop, with such varieties as are necessary in different localities, the whole forming a practical guide to the culture of this valuable esculent. Orange Judd Company, Publishers.

Peach Culture.—By the Hon. J. Alexander Fulton, *New Edition Revised, Enlarged, and in part Rewritten.* The various works on fruit culture treat of the peach as they do of other fruits in a general way; but until the appearance of Judge Fulton's book, in 1870, there was nothing that gave the operations of Peach Culture as a business. Living in the center of the greatest peach-growing district in the world, he was enabled to give every detail and to furnish a complete guide to those who would embark in the peach culture. During the 12 years that have passed since its appearance, while there have been but few improvements in the general operations of the nursery and orchard, there have been many new varieties introduced. During this time there has been a marked improvement in the early varieties of the peach, and the introduction of these and the discarding of others, have made it necessary to rewrite this portion of the work. In its present revised form the volume is, as it was originally, the only practical guide to Peach Culture as followed on the Delaware Peninsula, and of course essential to those who would undertake the cultivation of this fruit in any other part of the country. Orange Judd Company, Publishers.

The Chemistry of the Farm.—By R. Warington, F.C.S. This little work presents the relations of Chemistry to Agriculture in as popular a manner as the subject will allow. Its author is a co-worker with Lawes and Gilbert, at Rothamsted, Eng., where, as all who are readers of agricultural journals are aware, the most important investigations are constantly in progress. These are carried on by skilled experimenters, by the aid of abundant means, upon a scale sufficiently large to make the results of practical value to the farmer. While the author only occasionally refers to Rothamsted, and nowhere claims to speak for it, those who know of his position there, are warranted in regarding this work as in accordance with the results reached and the views held at that center of scientific activity. To the large number who have neither the time nor the inclination to take up the study of Chemistry, and yet would have a general idea of the relations of that science to the operations of the farm, this work will be welcome. While its style is clear and concise, it is far from being technical or dry, and the work cannot fail to be useful to every intelligent reader who is interested in the scientific aspects of agriculture. Orange Judd Company, Publishers.

The Care of the Lamps.

If a list could be presented of the deaths and frightful burnings that have occurred since the introduction of kerosene, it would be appalling. GOOD KEROSENE, that is, of the legal standard of quality, and that sent out by the best makers is far in advance of the legal requirements, *properly used*, need be no more dangerous than the old-fashioned sperm oil, or tallow dips. But it is vastly more so—Why? If we observe the accounts of these so-called "accidents," as they are given in the daily papers, it will be found that they are due to one of two principal causes: (1) Using kerosene to light a fire; and (2) to filling a lamp while lighted. Only the most ignorant can be so stupid as to pour kerosene upon a fire, and as such persons do not read, it would be a waste of time to caution them against it. Filling a lamp while it is lighted is something that ought *never* to be done. It can be avoided by always filling the lamps in the morning. This task should belong to some one member of the household, who should have a fixed and regular time for doing it; nothing ought ordinarily to interfere with or cause its postponement. It should be made *a duty*, to be discharged with all the regularity and punctuality of the daily meals. If good kerosene, of either of the best manufacturers be used, there is little danger of accident. Glass lamps ought *never* to be carried about, for the very reason that they *are glass*. This would hold, no matter what material they contain; even if it be sperm or lard oil, the breaking of a lamp is a disaster to be avoided. There is a chance that the one carrying it may slip or trip, or some other accident cause it to be dropped. With good kerosene, even the breaking the lamp and spilling its contents should cause no disaster in the way of burning; but all kerosene is not good, and the risk should never be taken. In "trimming" the lamps, only the small portion that is charred need be removed from the wick, and that is readily done by scraping with a knife kept for the purpose. If any substance collects upon the wick tube, that should be scraped off, leaving the brass or metal perfectly clean. After carefully scraping, wipe off the upper part of the wick tube, (and the wick), with a piece of very soft paper, to remove any small particles left in scraping. A wick may become unfit for use long before it is burned up. Many quarts of oil are carried through a wick, and in time the pores of the fabric become so filled with little particles of dust and other impurities that the oil contains, that its ability to take up the oil as fast as it is burned becomes greatly diminished, and when this occurs, a new wick is needed. If a lamp is filled *quite full* in a cold room, and then is brought into a warm one, the heat will cause the oil to expand and overflow, and lead to the suspicion that the lamp leaks. This should be avoided by not filling completely; knowing that this may occur sufficient space should be left to allow for the expansion.

SUNDRY HUMBUGS

Our budget of humbug documents is unusually large this month, showing that swindlers are ready to take advantage of the general activity looked for in spring business. We have fewer than usual of schemes especially intended to entrap farmers, an indication that farmers have grown more cautious and that swindlers find them less profitable customers. But the frauds upon the community in general are of interest to all citizens, including farmers. One of the most barefaced of recent swindles was

The "Ozone" Humbug,

and its rise and complete collapse form an instructive chapter in the history of humbugs. Last month, p. 50, under "What is Ozone," we endeavored to show our readers, by inference, that the article so widely advertised could not be Ozone. Just as the page with our Humbug article went to press, we managed to buy a $2 package of the stuff sold by the Cincinnati chaps as "Ozone." On making a rough chemical examination, we found that the stuff, as we had expected from the directions for its use, was merely Flowers of Sulphur mixed with some black powder. A little later we received a report made by our friend, R. B. Warder, Cincinnati, O., to the Mechanics' Institute, giving a detailed accout of his microscopic examination and chemical analysis of the stuff, in which he showed that this "Ozone" was only

Sulphur and Lampblack,

with some volatile oil to give it an odor. As the package, about a pound, cost the maker nearly five cents, and sold for $2, Mr. Warder is right in his conclusion that "Sulphur becomes extremely expensive when purchased under the name of Ozone." But "Ozone" failed, and the advertising firm that sent its deceptive announcements broadcast over the country, has failed also. This concern issues a pathetic circular, showing that the "course which has been adopted" by the *American Agriculturist* and some other newspapers caused their ruin. As this "course" was merely to show up one of the worst swindles of the age, we think these advertising agents will find little sympathy.

The Michigan Man too Late.

"Ozone" as applied to a parcel of brimstone is, to say the least, a misnomer, but here comes one who loudly proclaims the preservative qualities of

"Ozocerite, (By some called Ozone,)"

in much the same language and makes for it similar claims that the Cincinnati chaps did for their Ozone. What a jumble of fraud it all is! Here we have the name "Ozone," which belongs to a form of oxygen, given to colored brimstone, while another, thinking to improve on it, says "Ozocerite, sometimes called Ozone"—Sometimes, by whom? Does not the chap know that *Ozocerite*, (or *Ozokerite*), is a name belonging to a fossil wax found in Southern Europe, which has been in use for years in making candles, and has no more to do with ozone than ozone has to do with brimstone? The short career of the Cincinnati "Ozone" should warn the advertising agents to take no risks on "Ozocerite."

An Exquisite "Wash Rag."

The ladies in the suburbs of Newark, N. J., have

been visited by a good-looking young man, who could talk fluently about pictures and art. He had seeds for sale, each of which would produce a plant, with a most beautiful red, white, and yellow flower. As each flower opened it would disclose—of all things in the world—an exquisite "Wash Rag." Some sales were made at six seeds for a dollar, each seed warranted to produce three wash rags. One lady wrote us that, at that price, the flowers ought to produce lace pocket handkerchiefs; but some people are unreasonable. It is said that the wealthy persons of the neighborhood were pretty generally victimized. As the seeds are said to be somewhat like those of the pumpkin, but black, we suppose they may be those of the old "Dish Cloth," or "Bonnet Gourd," or "Sponge Cucumber" (*Luffa*) which we figured several years ago. The cucumber-like fruit, when ripe, has a net-work of fibres, which may be used in place of a sponge. But wash rags in the flowers!

Fraudulent Subscriptions.

Getting subscriptions under false pretenses is an old swindle, which has recently been revived in several localities, and especially in Pennsylvania. The chap at last accounts called himself Loring (but his name is sometimes Arlington), and took subscriptions for

"The Milliner and Dressmaker" of Lord & Taylor,

thus making use of the name of a leading New York Dry Goods house, known all over the country. Our correspondence shows that the chap has taken a good many subscriptions at $2, for a paper which has no existence. Messrs. Lord & Taylor publish no paper. The chap is a thorough swindler. Look out for him. Now and then we hear of a swindler taking subscriptions for the *American Agriculturist*, but the Postmasters have helped us a good deal in detecting such chaps, and it has got to be a very unsafe business. This Journal has friends and voluntary canvassers almost everywhere, who need to show no false "certificates of agency," and any man operating as an "agent" where he is unknown, and who has no undoubted credentials from parties who are known to those they approach, may as a rule be given a wide berth.

A Swindler Caged.

We have often shown how difficult it was to catch those swindlers who offer to sell Counterfeit money or "Queer," but who never have any of the article. One William Jones was sent to State Prison for 13 months in January last, not for offering bad money, but for using the mails for swindling purposes. These chaps so generally go clear that a conviction is worth recording. This good precedent having now been established, the determination of the Postal Authorities to not let that department aid in imposition will greatly aid in checking the operators of many varieties of swindling.

The Marriage Endowment Associations

are among the most recent of swindles, but they bid fair to be short lived. The State Auditor of Iowa has notified the Fairfield Association of that State, that, being really an Insurance Association, it must conform to the laws and make reports to the State Superintendent of Insurance, or he will proceed against its officers. He says: "The public have a right to know what business you do, and how you do it." As such concerns can not stand publicity, several in Iowa have given up business.

"Religious Lotteries."

Holding that any lottery, by whatever name it may be called, or whatever shape it may assume, is wrong in principle, and opposed to the best interests of the community, we do not think that any object, however worthy in itself, can be warranted in resorting to a lottery for the purpose of raising funds. We have received schedules and tickets issued in aid of a church in Canada. We might not notice this, were we not told that this

Lottery has the Episcopal Blessing,

While not accustomed to speak lightly of things which others hold sacred, yet we must protest when told that the purchase of a ticket in a lottery "entitles the purchaser to the spiritual benefits, and one mass weekly for the repose of their deceased friends for *two years* from the date of holding the Bazaar." Comment upon this mixing of the sacred and the secular is not necessary.

The Electric Battery Business

must be dull, as one of the most prominent makers of those useless metallic toys now comes out with "Electro-medicated Glasses." The picture looks like common spectacles, but appearances are deceitful. These glasses, we are told, "are produced by heat generated by electricity," while the medicated properties contained in glass make it as hard as a diamond." After that we are prepared to learn that several "Royal Highnesses," and many Dukes and Earls wear these glasses. Electricity is a wonderful thing!

Medical Matters.

We have several pamphlets, which, professing to be for the benefit of young people, are vile, and can only be described by the unpleasant epithet "nasty." Some of these are of a sensational kind and would no doubt convince many young people that they are in a dangerous condition, and that their only hope is in the medicines, the sale of which they are intended to promote. A proper regard for decency prevents quoting or minutely describing them. We can only advise young people to let all these things alone. Do not read them. They are of no use and only awaken needless fears. Be assured that all these claims to superior knowledge of medicine or to the possession of especial curative means are *false*. The chaps who write and publish these vile pamphlets have not a tithe of the knowledge of your family physician. They only want money. If one has a real trouble of any kind, he does not need one of these books to tell him of it. Do not send money to some far-off quack, but consult, in all confidence, your family physician. Any regular physician knows at least as much, usually a hundred times more, of these secret troubles or private diseases, than any of these advertising chaps. If they once get hold of your name they will ply you with exaggerated pamphlets, pictures, statements, etc., startling enough to make a well person sick, or to think he is. Then follow advice, medicine, etc., which will be kept up under various pretexts and promises, as long as a dollar can be squeezed out of the victim. This is the universal practice of all this class of private disease men, whether they advertise with a string of (false) medical titles, or as a benevolent association seeking to benefit the afflicted.

Oregon—Washington Territory.

If starting out now as a young man or under middle age, to engage in farming in a new country, and grow with it, we should be strongly tempted to pass beyond the Rocky Mountains, and settle on the Pacific Coast, in the western portion of Oregon, or Washington Territory. The climate, the soil, and the location indicate that these will some day take a prominent part along with California, not only in feeding the Pacific Division of our country, but also in contributing materially to the consumption of other lands. The wheat product of 1881 is estimated at over fifteen million bushels, of which twelve million bushels will be sent to foreign countries.

Oregon alone, with a population of 174,768, contains nearly 61,459,200 acres (96,030 square miles), or 1,052,800 acres more than New York and Pennsylvania combined. — Washington (population 75,116), has 44,275,200 acres (69,180 square miles), or 1,737,600 more acres than all the six New England States. Together, Oregon and Washington equal all New England, New York, and Pennsylvania, with half of New Jersey; or all of Indiana, Illinois, and Iowa, and enough over to make two more States nearly as large as Massachusetts. So much for the areas of the North-western corner of our country.

Though in the latitude of the Canadas, the climate of even the northern part averages about that of the southern New England States, and seldom falls so low in winter. A wide belt runs nearly 500 miles north and south between the Pacific Ocean and the Cascade range of mountains, has a full rain-fall, and all farm and garden products grow in perfection. A good deal of this is covered with majestic pine forests, but there is also a considerable area of fertile soil covered with mixed forest trees, the removal of which is the only obstacle to pioneer farmers, as was the case in Michigan and Western New York. — A satisfied tone always pervades the letters from the numerous readers of the *American Agriculturist* in Oregon, and especially in Washington Territory. New railroads, projected and building, will soon bring a large region into easy communication with the East and South, while the numerous rivers and the Pacific Coast harbors open ready communication with the teeming population of the Islands of the Pacific and the Eastern Continent.

The majestic Columbia River passes directly between Oregon and Washington Territory to the Pacific, and it will perhaps surprise some of our eastern readers to be told that Portland, 100 miles up the Columbia River, but 10 miles from it on the Williamett branch, contains to-day 23,000 inhabitants, has an assessed valuation of ten millions, with twenty individuals and corporations each paying taxes on one hundred thousand dollars; that its exports for November alone were worth $1,500,000, carried in 21 deep-water vessels, and that at one time in December, 25 sea-going vessels were loading and unloading at its wharves. We noted in December that over 26,000,000 lbs. of salmon were canned in Columbia River alone during 1881.

In thus calling attention to these magnificent north-western regions, comparatively little known by the majority of people, we do not ignore the great agricultural attractions of California, and of the almost boundless and as yet but partially occupied farming regions east of the Rocky Mountains.

An Ensilage "Congress" was held on the 25th and 26th of January, under the management of Mr. J. B. Brown, of the New York Plow Co. Mr. Brown was early convinced that the important experiments and practical results of the Frenchman, Geoffart, repeated in this country first by Mr. Francis Morris, of Baltimore, indicated a revolution in farm practice, which, as a manufacturer of agricultural implements, he might well take advantage of. This revolution seems really imminent. Practical farmers, gentlemen farmers, and people who wanted to be farmers, to the number of one to two hundred attended this conference. "Congress" sounds very grand; it was really an "experience meeting." Mr. Brown's newest and best of all fodder cutters were at the rear of the room, where was spread a lunch-table of crackers and cookies and cheese, and excellent hot coffee. The tables near the chairman were covered with specimens of ensiloed crops—ensilage of maize, in variety, ensilage of rye, of clover, of oats, of grass, etc., all well preserved; most of them having a somewhat agreeable odor. Butter was shown also made from ensilage-fed cows, not one specimen however was of really fine flavor and odor. Butter made on good clover hay and corn meal would have beaten it out and out. All but one specimen, brought by the chairman, was colored, but the pale lardy pat had the best flavor of all in the judgment of several experts. There was considerable diversity of opinion in regard to crops, management, cultivation, the amount which could be raised per acre, etc., but all agreed as to its value and as to the great economy of land effected by it. After several thoroughly practical farmers had declared that the greatest yield of corn fodder weighed green, as it was cut, which they could get was 15 to 20 or 25 tons to the acre, Mr. Mills, of Pompton, declared his belief that he had cut upwards of 70 tons. He estimated his crops cut, upon 13 acres, by weighing a cubic yard, cut from different parts of his silo. The meeting was a very pleasant one. Those in attendance represented large wealth and intelligence, and had a most earnest interest in the subject. The *American Agriculturist* has kept its readers informed in regard to the whole subject of ensilation of green crops, and the facts presented at this meeting tended to confirm the claims made for the practice.

Products of Kansas in 1881.

Facts and Figures from the Report of the Kansas State Board of Agriculture.

The total value of the field crops of Kansas for the past year exceeds that of any previous year in the history of the State by fully 40 per cent. Neither the aggregate nor the average yield of the staple crops has been as large as in some other seasons, but the better prices obtainable in the present markets have greatly enhanced the gross valuation. In 1879, the total value of the twenty-two principal crops was, in round numbers, $60,000,000; in 1880, $63,000,000. In 1881, the same field crops foot up $92,000,000. This is certainly encouraging to Kansas farmers, who for a time felt a trifle blue because their harvests were lighter than usual.

The following table shows the yield and valuation of the corn and wheat crops in Kansas for the last five years:

Year.	Corn. Bush.	Value.	Wheat. Bush.	Value.
1877	103,497,831	$20,206,184	14,316,705	$12,640,128
1878	89,324,971	17,018,968	32,315,358	18,441,065
1879	108,704,927	26,562,674	20,550,936	18,448,710
1880	101,421,718	24,926,079	25,279,884	20,980,667
1881	80,760,542	44,859,963	20,479,689	21,705,275

Twenty per cent less corn this season brings eighty per cent more cash than last; and the wheat crop of less than 21,000,000 bushels is worth $3,250,000 more than the enormous crop of 1878 (32,315,358 bushels), which was about sixty per cent greater.

In the above statistics of "field crops," the products of orchards, vineyards, and market-gardens are not included. The horticultural products alone for the year amount to $1,882,365; and the garden truck to $496,083. Add to these the value of slaughtered animals, butter, eggs, cheese, etc. (all included under products of live stock), $21,682,888; the increase for the year in the value of all farm animals, $6,952,504; and the value of wax and honey, $22,210; the total footings of the Kansas farmers' credit column for 1881 is $122,946,490, a good round sum! After corn and wheat, the next crops in the order of their aggregate value are:

Prairie Meadow Hay	1,216,316 tons,	$6,218,218
Millet and Hungarian	752,478 tons,	4,818,970
Oats	9,900,768 bushels,	3,855,750
Irish Potatoes	1,854,140 bushels,	2,710,377
Sorghum	3,899,440 gallons,	1,745,871
Broom Corn	32,961,150 pounds,	1,480,116
Flax	1,184,445 bushels,	1,357,944

The total number of acres under cultivation in the State was 9,802,719; an increased acreage of 12 per cent over that of 1880. South-Central Kansas, and the Arkansas River Valley in general, show the best results for the year of any portion of the State. The banner corn and wheat counties lie in this region, and the live stock interests are here developing most rapidly.

The wheat prospects for the ensuing season could not be better. In all parts of the State the stand is reported as even and strong, the color good, and every indication for a splendid crop.

On the whole, however, Kansas has done well in 1881, in the midst of an almost universal drouth over the great agricultural States. Eastern Kansas suffered severely from the protracted heat and the lack of rain; but the South-Central and South-Western portions of the State were favored, and these by their bountiful crops of every kind sustained the hitherto excellent reputation of Kansas for fertility and productiveness. P. B.

Potato Bug Swindle.—Reports come to us from Western readers of sharpers who go about the country selling packages highly recommended as a "simple, sure, cure for Potato Beetles."—On the outside the parcels are labelled: "Don't open to expose to the air until ready to use," and "Directions for use inside."—After the swindlers are at a safe distance, the purchaser being ready to apply the "safe cure," finds on opening the parcel, two blocks of wood, with the "direction": "Put the beetles on one block and mash them with the other"!—This reminds us of a trick upon a Canadian Custom-house officer, that took place on the Niagara River boundary in our boyhood days. A Yankee took over a load of American cheese, and entered it at a low valuation. The officer took advantage of the law allowing him to buy any article at the valuation, and sell it on Government account. The seller returned to this side, cut out a lot of oak blocks, pressed cheese curds around them in the form of cheese? and crossing the river entered them as "White Oak Cheese" at the same price as the previous lot. The officer took these also at the "valuation," but before he had sold them the seller was at a safe distance on this side, and besides they were what he called them.

The Agricultural College of Ohio is a department of the Ohio State University at Columbus. The propriety of appointing a wide awake, enthusiastic young man as professor of Botany and Horticulture is shown by the steps Prof. W. R. Lazenby has taken to found a Museum of Agriculture and Horticulture, not only for the use of the College, but which shall be open to all who choose to visit it. Prof. L. asks the farmers, gardeners, etc., of the State to contribute seeds, woods, insects, or whatever will be of use in illustrating any branch of Agriculture or Horticulture. He incidentally mentions the seeds of weeds as desirable. We would suggest on his behalf, and that of the Museum, that nothing can be more useful than a collection of the seeds of the commonest weeds. Weeds are so abundant everywhere, that no one thinks of collecting their seeds. It is easy enough to find the seeds of rare tropical plants, but if one wishes to identify a seed, as that of the Canada Thistle, Dandelion, or Cockle, he will be puzzled to find specimens for comparison. Let our Ohio friends help Prof. Lazenby make a museum creditable to the State.

Hæmorrhoids in Cattle.—A. E. Morris, Dodge Co., Neb., wrote that the cattle of his herd were affected with what appears much like hæmorrhoids (piles) in the human patient, each passage being accompanied by bleeding. The letter was referred to Dr. A. Liautard, Professor in the American Veterinary College, New York City, who writes:—"This disease is very rare in cattle, and when it occurs is due to excessive constipation. The remedy is to give laxative food and medicines that will loosen the bowels, such as Glauber's Salt. An application of cold water to the parts will allay the swelling and pain."

The White Grub in Ill.—W. H. Grace, Stark Co., Ill., writes:—"Corn has been in this county the nearest a failure that I have known in over 35 years, due mostly to the larva of the May Beetle."—This and other reports indicate that this trouble is on the increase, and it can only be controlled by united action.

Crude Petroleum.—"H. Van I." Petroleum will not answer as a medium for mixing paints of any kind. What are called "drying oils," like linseed oil, when exposed to the air, form a thick, solid substance which holds the powder used as paint, attaching that to the wood, so that it can not be rubbed off. If petroleum be mixed with a powder, such as white lead, a part of the petroleum would evaporate, another part sink into the pores of the wood, and the paint itself rub off as easily as common lime-wash. The proper use of Crude Petroleum is as a preservative. Applied in successive coats to shingles, implements, etc., as much as the wood will take up, it prevents decay in a remarkable manner.

Large Persimmon Trees.—C. F. Willetts, Queens Co., Long Island, brought us some unusually fine Persimmons, a portion of the crop of fourteen large trees, supposed to be over 100 years old. These trees are about 50 feet high, and have but few branches. It is not unusual to find trees as tall as these in the Southern and Western States, but we think it must be an exceptionally large size for the Persimmon to attain in a locality so near its northern limit, which is Rhode Island.

The Indiana State Agricultural College, of Purdue University, reports 254 students, though only two of them are in the special Department of Agriculture. The School of Chemistry and of Industrial Arts, have the largest patronage. This institution has abolished the secret fraternities. An appeal to the courts to test the right of the Faculty to exclude students who persisted in keeping up such societies, has been decided in favor of such right. The ground taken by the Faculty seems all the more remarkable, because among them are professors who in other colleges had been members of the four leading "Greek letter fraternities."

Indiana Wheat and Corn Crops.—The State Bureau of Statistics has reported for 1881: Wheat yield 30,625,668 bushels; in 1880 the crop was 47,130,684 bushels, a falling off of over 16,500,000 bushels, or 35 per cent. Of Corn, 71,387,075 bushels in 1881, against 87,335,014 bushels in 1880. Decrease about 16,000,000 bushels, or nearly 18¼ per cent, despite the increased acreage in both crops—mainly the result of the drouth.

Fifty-nine Million New Coins—Weighing Money.—During 1881, at the Philadelphia mint alone, 59,174,635 new coins were made, viz., 2,260 double eagles ($20); 3,877,260 eagles ($10); 5,708,800 half eagles; 550 $3 pieces; 680 quarter eagles; 7,660 gold dollars; 9,163,975 silver dollars; 10,975 half dollars; 12,975 quarters; 24,975 dimes; 72,375 five cent pieces; 1,081,575 "nuisances" (3 cent pieces); 39,211,575 cents, and 960 "trade dollars." Total value: $76,976,165¼. To count these pieces, 54 persons would have to work nearly nine hours every week day in the year and count one piece every second. But they are estimated by weight. To an American it is a novel sight to go into the Bank of England, and other large banks there, and observe that in receiving and paying out coin they do not count it, but the clerks shovel it into scales with a small hand scoop, and *weigh* out so many pounds, shillings, or pence. Besides the advantage of quickness and accuracy, this method often detects spurious or defective money, when a number of pieces vary a trifle from the exact weight. When this occurs they divide the sum into equal parts in the two scales; then the lighter half, if that is the defect, is again divided, and so on until the varying piece is soon discovered.

Lady Apples.—Had Mrs. G. W. Z. given her address we could have written her about the Pomme d'Api—most commonly called the Lady Apple. The reason her apples do not keep well is because they are in too dry a place. If barrelled and placed in a cool cellar, they should come out plump and fresh for the holidays. If those upon her trees the past season have lost their gloss and freshness, it must be owing to the long drouth, which at the East caused fruit to ripen prematurely.

Hot-Beds with Fire-Heat.—Some notes with reference to the hot-beds, described in Dec. last, come from Wasco Co., Oregon. J. Hunsaker writes, that he has used such beds for several years, and would caution those who build such in a light soil, to always lay the stones for the flues with clay mortar. The writer of the article referred to lays them without mortar, which our Oregon friend says, will, in a light soil, allow the smoke to pass through and injure the plants. He uses 12-in. boards for the chimney, following the chimney-builders' rule, that the chimney should not contain anywhere beyond the throat a less number of square inches than there are at the throat.

The Strawberry Season.—As an illustration of the manner in which steam transportation interferes with the regular succession of the seasons, we may cite the Strawberry crop. The first strawberries in the New York market—at least the first we saw—arrived on Jan. 24th, from Florida. The supply from this State will be followed by that from Georgia, the Carolinas, and so northward to Virginia and New Jersey, making a continuous season until the far northern localities send the last strawberries in July and possibly August. This *is* a great country in some respects.

What Varieties Shall I Plant?—We have a number of letters asking us to name the five or ten best varieties of apples, pears, etc., suited to the writer's locality. Though these letters come from Maine to Colorado, it would be an easy matter to give the lists so far as experience shows the varieties that succeed best in each State. But there is a question even more important, that our friends do not usually consider. It is evident, from most of these letters, that the planting is to to be made with a view to selling the fruit. The first consideration should be the needs of the market where the fruit is to be sold. Varieties meet a ready sale in St. Louis and Chicago that are little if at all known in New York and Philadelphia. The difference, while considerable, is not so great in late keeping fruits, but with earlier varieties, which are often the most profitable, inquiry should first be made as to the kinds most salable in the market to which the fruit will be sent.

Setting Strawberry Plants—Distance.—"L. R. G."—The answer depends on whether you refer to a small garden, or to field culture. If the plants are to be worked with a horse cultivator, make the rows 30 to 36 inches apart; otherwise, two feet, and set the plants one foot apart in the row. You can then adopt either method of cultivation that may be preferred. All the runners may be cut off as they appear, leaving the plants in separate stools, or you may turn a part of them so as to take root in the intervals and form a matted row, the latter being, on the whole, preferable with most kinds.

Changing His Corn.—"G. S. S.", Pa., is not altogether satisfied with the corn, one of the Flint varieties, that he now grows, and asks our advice about procuring a kind of Dent corn from Minn. Indian corn is, probably more than any other plant, affected by local conditions. When a variety has been cultivated in a neighborhood or on a farm, and a selection of what appears to be the best, is planted year after year, there is established after a while, if not a variety, what florists call a "strain." There are all over the country those kinds of corn that have been, so to speak, bred to suit the peculiarities of a particular locality. This being the case, it is not advisable to make a wide step from the known to the unknown; to give up a well tested kind, and substitute one that has not been tried. If a change is desirable, we should advise seeking a better kind in the vicinity. If it is wished to substitute the Minnesota variety, it is better to begin with merely enough to furnish seed for another year, provided the results of the trial crop next season should warrant it. Violent changes in an important crop are not safe.

Western Farm Homes.

PHILADELPHIA, Jan. 31, 1882.

ORANGE JUDD CO.—*Sirs:* According to your article in the January number on the West, I really expected a better article: not thinking that your correspondent would be captured by railroad monopolists, but give us some practical information regarding the West. For instance, what amount would be needed by a family of four? I would have furnished quite a different article to your readers.

I am a mechanic, and have written to the West for information, but they have not answered it yet, and I will likely be in Minnesota by the time of your next issue.

If you wish a correspondent I am open for engagement. A. N. HALLOWELL,
Philadelphia, Pa.

Answer.

The article alluded to, in our last paper, which aimed to cover the whole question of Western Lands for sale, cost Mr. David W. Judd several weeks and several thousand miles of travel.

It was carefully prepared, not for the benefit of any corporation, but expressly for the benefit of the readers of this paper. None of the railroads requested or solicited descriptions of their lands. The facts presented in such a condensed form were gathered by Mr. Judd during a long tour, and are the result of personal observations and questions propounded to those having charge of or living upon the various lands described. So far from being of any financial benefit to the paper, this tour entailed a heavy cost upon the publishers.

If the above reader expected the *American Agriculturist* to tell him how much land he wants for a family of four, what it will cost him to go from Philadelphia to forty or fifty different Western points; how much it will cost him to take his stock, etc., etc., we have simply to say to him, as to others, forty extra pages would not have contained particulars enough to meet the wants of individual readers. Such information, however, we furnish from time to time.

We gave a general outline of the country and data from which readers could draw their own inferences and conclusions as to what points they should migrate to.

Some of the Railroads described have written complaining that more space was not given to their respective roads. We have to say in reply, that we endeavored to describe all impartially, and as we said before, we wrote the article for the benefit of our readers.

Another point; since the issue of our February number, bills have been introdueed both in the Senate and House of Representatives repealing the Land Grants of various Railroads—some of them included in our article. The grounds given are failure to conform to original conditions of grants. One of the roads against which the bills appear to be directed, is the St. Paul and Manitoba R. R. in Minn., the lands of which were deseribed at considerable length in our article. By our next issue we shall be able to know more about the matter. Meanwhile we would of course advise those of our readers who may have thought of purchasing along this road, to wait for the present. Should these grants be annulled, large tracts of lands would probably come into market at government prices.

Careless Letters and Lost Ones—Was Yours Among Them?—The English Post Office recently rcturued to our Dead Letter Office a letter containing a $25,000 draft, mailed by a hanking institution of New York City, directed to "National Provincial Bank of England, Belfast, England," instead of "Provincial Bank of Ireland, Belfast, Ireland." When large hanking institutions make such mistakes, and with such large sums, it is less surprising that so many other people are sometimes careless. Our Post-Master General's last report says over one thousand million letters (1,046,007,348) were mailed in our country during the year. Of these over three millions (3,323,621) went to the Dead Letter Office, or one in every 315, among which were 18,617 containing $4,058,730 in money, and 22,012 enclosing checks, drafts, etc., for $1,899,062¼—that is, 38,629 letters containing cash remittances went to the Dead Letter Office through improper directions or lack of stamps. A much larger number were doubtless returned to the writers by the local postmasters. If one letter out of every 315 is thus miscarried through the carelessness of the *writers*, is it any wonder that Publishers and others dislike to bear the loss of money reported to have been sent, without registry? If *our* correspondents were as careless as the average, our lost letters would run up into hundreds every year.—But this does not tell half the story. A greater number who get the outside all right, omit their names, or their State, if not their P. O., and, strange to say, second or third "blowing up" letters still omit some necessary item, as the name, or any indication which of the multitudes of "Washingtons," or "Hamiltons," or "Jacksons," or "Middletowns," etc., they hail from. Others send money in unsealed letters—a bad temptation to P. O. clerks. People don't mean to make mistakes, but they *do*—though no one can helieve *he* did—and the publishers get all the blame.

Area and Relative Size of the States.

Some comparisons of the relative areas of several States will be interesting, and also help the memory. Texas, cut into equal parts, would make 212½ States as large as Rhode Island; 129½ Delawares; 54 Conneetieuts; 34 New Jerseys; 32 Massachusetts; 6¾ Ohios; nearly 6 New Yorks or Pennsylvanias; nearly 5 Illinois or Iowas. Grouping the States nearest alike in size we have, in *square miles:*—

Rhode Island	1,250	New Jersey	7,815	S. Carolina	30,350
Delaware	2,050	Massachusetts	8,315	Maine	33,040
Connecticut	4,990	N. Hampshire	9,305	Indiana	36,350
		Vermont	9,565	Kentucky	40,400
		Maryland	12,210	Ohio	41,060
		West Virginia	24,780	Virginia	42,450
Tennessee	42,050	Alabama	52,250	Florida	58,680
Pennsylvania	45,212	N. Carolina	52,250	Michigan	58,915
Mississippi	46,810	Arkansas	53,850	Georgia	59,475
Louisiana	48,720	Iowa	56,025		
New York	49,170	Wisconsin	56,040	Missouri	69,415
		Illinois	56,650	Nebraska	76,855
Kansas	82,080	*Territories.*			
Minnesota	83,365	Dist. Columbia	70	Arizona	113,020
Oregon	96,030	Indian Ter.	64,690	New Mexico	122,580
Colorado	103,925	Washington	69,180	Montana	146,080
Nevada	110,700	Idaho	84,800	Dakota	149,100
California	158,360	Utah	84,970	Alaska	577,390
Texas	265,780	Wyoming	97,890		

Besides the above, there is of unorganized territory (Long. 100°—103°; Lat. 36° 30′—37°), 5,740 square miles; Delaware Bay, 620 *sq. ms.;* and Raritan and lower New York Bay, 100 *sq. ms.* Alaska we give from *estimate;* its area is not fully known.

The above are the gross areas, that is land and water included. In the whole United States (exclusive of Alaska) there are 3,025,600 square miles. Of this 2,970,000 *sq. ms.* are land surface, and 55,600 *sq. ms.* of water surface, of which 23,900 *sq. ms.* are in lakes and ponds; 17,200 in coast bays, gulfs, sounds, etc., and 14,500 *sq. ms.* in rivers and smaller streams. The whole *water* surfaces in the total areas of the different States and Territories, as given above, are in square miles, as follows:

Ala.	710	Geo.	495	Md.	2,350	N. H.	300	S. C.	400
Ariz.	100	Idaho.	510	Mass.	275	N. J.	360	Tenn.	300
Ark.	805	Ill.	650	Mich.	1,485	N. Mex.	120	Texas.	3,490
Cal.	2,380	Ind.	440	Minn.	4,160	N. Y.	1,550	Utah.	2,280
Col.	280	In. Ter.	600	Miss.	470	N. C.	3,670	Vt.	430
Conn.	145	Iowa	550	Mo.	680	Ohio.	300	Va.	2,325
Dak.	1,400	Kansas	380	Mont.	770	Oreg.	1,470	W. T.	2,300
Del.	90	Ky.	400	Neb.	670	Penn.	230	W. Va.	135
D. C.	10	La.	3,300	Nev.	960	R. I.	165	Wis.	1,590
Fla.	4,440	Maine.	3,145	Total.			55,600	square miles.	

This last table is interesting. It shows for example that Maryland with a total area of only 12,210 square miles, includes 2,350 square miles, or nearly 20 per cent of water surface, leaving but 9,860 sq. ms. of land surface. Arizona, with 113,020 sq. ms. of surface, has barely 100 miles of water surface; and Colorado has but 280 miles of water in 103,925, leaving 103,645 of land. Minnesota, which abounds in beautiful lakes, has 4,160 square miles of water surface, of which 3,800 are in lakes and ponds, and 360 in rivers and smaller streams.—In this it is only approached by Florida, which has 2,250 in lakes and ponds, 390 in rivers and streams, and 1,800 in coast gulfs and bays. Of water surface in interior lakes and ponds, Utah has 2,700 square miles; Maine 2,300; Louisiana 1,700; California 1,600; Michigan 1,225; Wisconsin 1,170; Nevada 925; Oregon 920; New York 900; Vermont 380, and so down to Connecticut 40; New Jersey 35; Virginia 25; Colorado 10; South Carolina and New Mexico 5 each.

More Corn Bread Recipes.—"Mrs. A. A. R.," Pana, Ill., thinks that in simplicity and excellence, the following is preferable to any of those given last month. ....*Corn Batter-Cakes* (for a family of five).—Take 1 quart of buttermilk or sour milk, 1 teacupful of flour, half teaspoonful of soda. Mix well together, and stir in sifted corn meal enough to make a batter. Then, at the last, stir in 2 eggs, and salt to suit the taste. Mix the whole well together; have the griddles hot, and bake the same as buckwheat cakes, and serve while hot.... *Corn Bread.*—Take the same ingredients as above, except to stir in more corn meal, to make a little stiffer batter; put it in the pan, and bake it about 15 *or* 20 *minutes* in a hot oven.

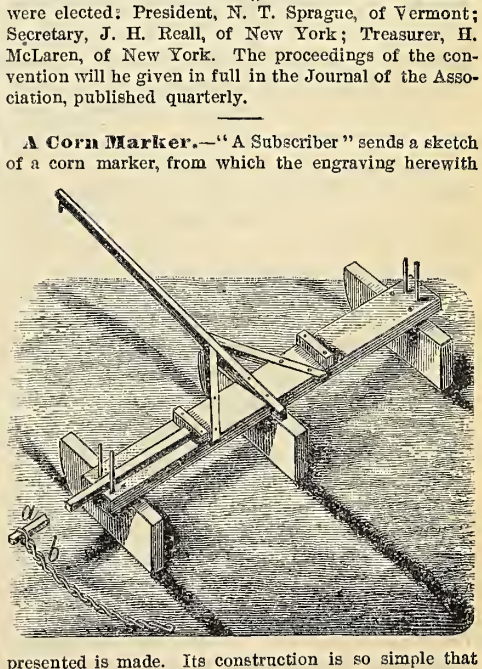
Kentucky Blue Grass.—"J. M. H.," Indiana Co., Pa. "Kentucky Blue Grass" is the same as that known in other localities as "Green Meadow" and "Jnne Grass." Finding in the limestone regions of Kentucky a congenial soil, it there took on such a luxuriant growth that it was for some time regarded as a distinct species. It is sown in Septemher, or in very early spriug, even before the snows have disappeared. It may be sown by itself or with an oat crop. It is very essential to keep off the stock for the first year if a valnable pasture is to be established. The seed differs greatly as to quality. In Kentucky, three or four quarts of clean seed is regarded as enough for an acre, but as nsually found in the market, six pecks is none too mnch.

A Garden Marker.—The accompanying engraving shows the construction of an easily made hand marker, for use in the garden. It consists of a light

scantling, with pegs inserted at intervals for making the rows in the garden soil. Two light pieces connect the "head" of the marker with the handle. The size of this marker and the distance between the pegs may vary greatly. This must be decided by the person who may choosc to make it; one for making cross-lines in beds will be smaller than one to be used for making long rows, between which a larger hoe or rake are to be nsed.

The American Agricultural Association.—The second convention of the A. A. A. was held on February 1, 2, and 3, in the hall of the Grand Central Hotel, in New York. The first and second days were given to addresses and papers on various agricultural topics, together with discussions upon the same. The third day was spent in a visit to T. A. Havemeyer's famous "Monntain Side Farm" at Mawah, N. J. Resolutions were passed hy the convention recommending a revision of the tariff by Congress at an early day; also, one favoring the passage of a bill hefore Congress to provide for a Commissioner of Agriculture in the President's Cabinet. The following officers of the association were elected: President, N. T. Sprague, of Vermont; Secretary, J. H. Reall, of New York; Treasurer, H. McLaren, of New York. The proceedings of the convention will he given in full in the Journal of the Association, published quarterly.

A Corn Marker.—"A Subscriber" sends a sketch of a corn marker, from which the engraving herewith

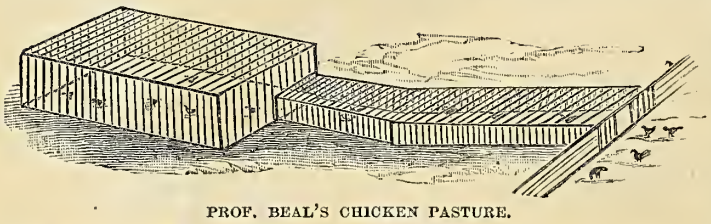


presented is made. Its construction is so simple that very few words of explanation are required. The guide rod (*a*) is broken, and the end, with its chain (*b*), hronght near the runner, simply to save spaee in the illustration. The guide rod and chain are easily changed from one end of the marker to the other.

A Chicken "Pasture,"

BY PROF. W. J. BEAL, MICHIGAN AGRICULTURAL COLLEGE.

In the January number, you illustrate a coop for chickens. This reminds me of my plan for "pasturing fowls." As we are situated, fowls are not permitted to run at large. I have a yard surrounded by a high fence in which they are confined. No grass or weeds get a start in such a place. I made a box-coop two feet high, four feet wide and ten feet long, using common pine lath, nailed to stouter pieces. It could be smaller. This is quite light so that any person can draw it from place to place. To prevent fowls flying over, lath strips are nailed across the top. In a word the coop is a box made of lath turned



PROF. BEAL'S CHICKEN PASTURE.

with the open side next to the grass. At one end is a small hole, from which extends a movable runway made of lath. I have several of these runways, some longer, some shorter, so that I can give the fowls a fresh place every day. They can in this way feed over a large part of the lawn surrounding the yard. Several years of experience prove this to be an admirable arrangement for a small number of fowls where it is not desirable to permit them to run at large.

A New Disease Among Dairy Stock.

BY X. A. WILLARD.

Sometime in March, last year, a singular disease broke out among the dairy cows in Lewis County, N. Y., and made its appearance also in adjoining counties. It was described by correspondents in the "Utica Herald" and other papers of the interior, as an excessive scouring or diarrhœa coming on quite suddenly, attacking cows apparently in good health and rapidly prostrating them: and further that it seemed to be contagious, generally attacking animals exposed to it and extending to every member of the herd. It was described as *a terrible scourge*, which was causing much alarm among farmers in this part of the State. As the animals were said to be apparently healthy before this disease made its appearance, and as there was no change from the ordinary feed or water, nor indeed in any treatment of the stock, the causes of this outbreak could not be accounted for. It suddenly appeared on farms widely separated from each other and where there had been no communication with infected herds. A disease of this kind going through the herds had never been seen or heard of by dairy farmers in the section referred to, and on account of its peculiar character of attack and spread, it was designed as "Winter Cholera." Though several accounts were given in the papers from time to time, concerning the progress of this disease, nothing was said in regard to its treatment.

About the middle of April I purchased from a drove four cows to fill up my herd. All the animals in this drove had been picked up in Schoharie Co., N. Y., and by easy drives had been brought into Little Falls. The cows I selected were grade Ayrshires and Shorthorn. One of the Ayrshires was thin in flesh and was already in milk; the others were in good thrifty condition and all of them appeared to be in good health. While selecting the animals the seller remarked that when he started his drove, the cow in thin flesh was "in much the best rig" of any of the four; but that she had been taken with severe scouring while on the road, and before he could find a stopping place and get help she had fallen away rapidly, and at one time he thought he should lose her. On treating her however, after a recipe obtained from an old drover (which he had often found useful in such cases) she had recovered at once, and had since been gaining in flesh every day. He attributed the excessive scouring to change of water and feed on the road, and as I rather hesitated about taking her, he said he would "warrant her all right," and besides give me the recipe which perhaps would prove useful on some occasion. As the man was well known to me and one I had dealt with before, I accepted his terms. The cows were driven to my farm and placed in stable with the other members of my herd, and I thought no more of the matter until about a week after their arrival, when the cow standing next to the one warranted, was taken suddenly with scouring and diarrhœa. My farmer thought at first the trouble was only a temporary one and left her overnight without treatment. In the morning she looked badly, the discharges being excessive and frequent. I determined at once to try the drover's recipe, which consisted in taking the inner bark of the Iron-wood tree, commonly called "hardhack," and rolling up a ball of it about eight or nine inches in diameter, or as the drover expressed it, "the size of a man's head," and then steeping the bark in this proportion with 12 quarts of water. The mixture should be reduced by boiling or simmering over the range until reduced to six quarts of liquid; when cold give from one to two quarts, and repeat if the scouring is not checked. We administered the liquid from a strong, long-necked bottle, and in three doses given at intervals of about six hours each, when the trouble was overcome and with no further derangement to health, except that the cow was very weak. During the next few days every animal in my herd, with the exception of this warranted cow, was attacked in a similar way, and I have no doubt the complaint was introduced by the cow from the drove; and in addition, that the disease was the so-called "Winter Cholera," which had appeared in Lewis Co.

No other cases of the kind occurred in the vicinity of my farm. Possibly any astringent bark or medicine would have answered the same purpose as that used, but as this seemed to be effectual, and as the Iron-wood tree is common in most parts of the State, many farmers have a remedy at hand on their own farms, for the treatment of this strange disease. I say *strange* because in all my experience with dairy stock, extending over a period of 30 years, I have never seen anything like it. Nor have I heard of it appearing in any herds except the cases referred to in Lewis Co., etc. Perhaps the Veterinary Surgeons may explain the causes of this disease, which certainly *is a scourge*, unless promptly treated. After the first case in my herd, the animals, as soon as attacked, were treated to a dose of this medicine, and generally one dose was sufficient to check it; and afterward the animals were not affected in health on account of the trouble.

As this disease will probably make its appearance again during the coming spring, this statement of my experience with it may perhaps be of some service to the dairy readers of the *American Agriculturist*.

Live and Dead Weight of Turkeys.

A farmer frequently wants to know the fair price for turkeys alive, when the price is fixed by the butcher, or by the middleman, who buys for the large city market. New York takes turkeys simply bled and picked. The New England markets, with better taste, want the crop and entrails out. The average loss in dressing will be about one-fifteenth for the New York market, and about one-tenth for the Eastern markets, a little more for small immature birds, and a little less for large well fattened turkeys. An old gobler weighing 31¾ lbs. alive, after loss of blood and feathers, weighed 29½ lbs., or abont one-fifteenth; when ready for roasting, 28½ pounds, a loss of about one-tenth. This bird, at 20 cts. a pound, the price which middlemen have paid for first-class dressed turkeys in Connecticut the present season, would come to $5.70. Sold by live weight at 18 cts., it would come to $5.63. This would leave only 7 cts. for butchering and dressing, which is below cost. The difference then, between live and dead weight in turkeys raised for the Eastern market, is not over 2 cts. a pound. Lively middlemen ask a deduction of 3 or 4 cents. The farmer may as well know that the difference in value is only two cents, and claim it.—CONNECTICUT.

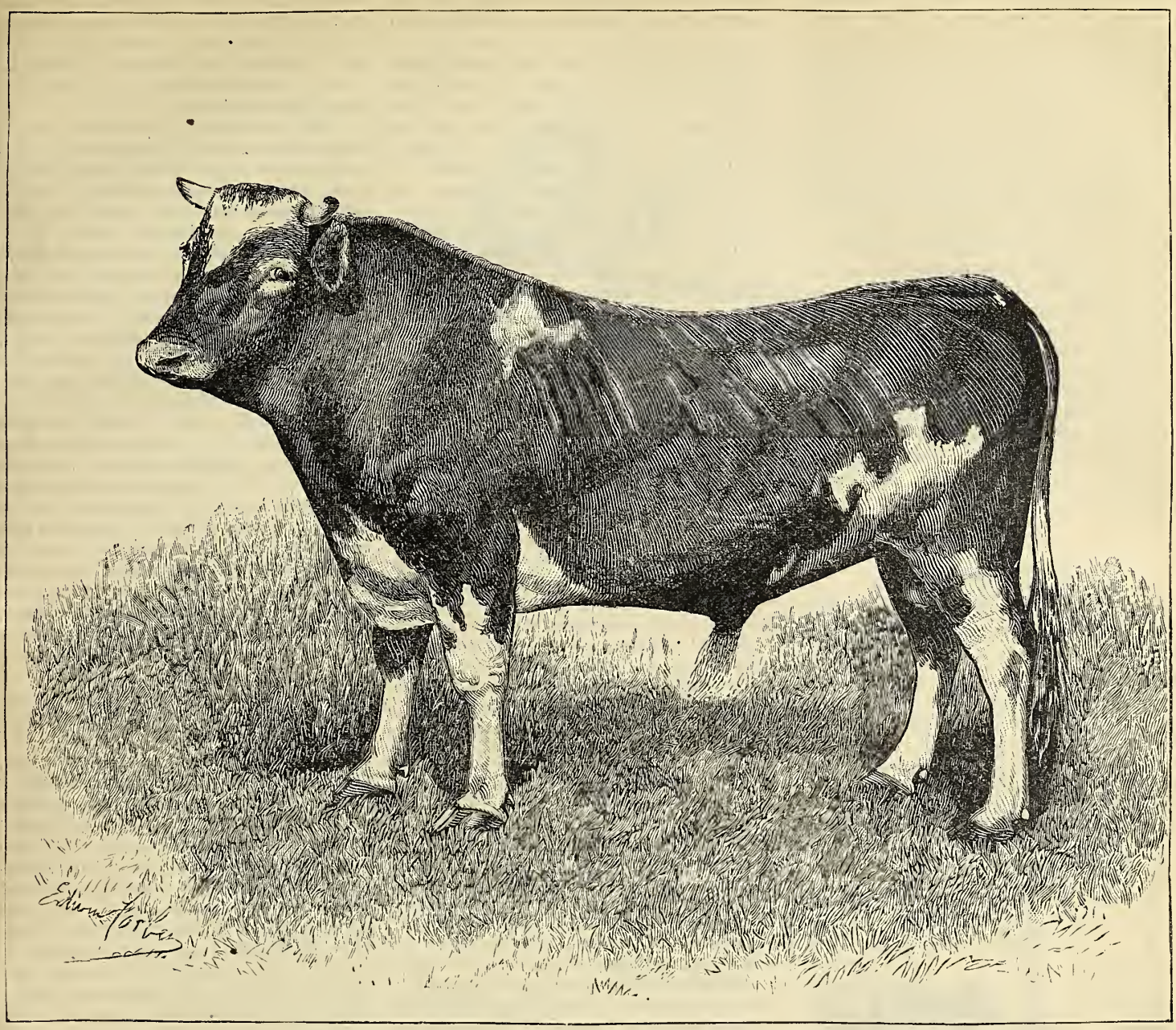
An Improved Screw-Driver.

Mr. Wm. Jackson, Madison Co., Ill., has improved his screw-driver by cutting an "eye" in the blade in which a lever can be inserted. By this means much additional

AN IMPROVED SCREW-DRIVER.

power can be applied, and old fast screws can be readily started. The engraving shows the form and position of the "eye."—We would add that screws which have been long in place and have become fast by the formation of rust, are very often difficult to start, even the device here given would be of little help. It is customary to apply olive oil to such screws to loosen the rust. The use of kerosene will be found much more efficacious. Kerosene is of such a penetrating character that it will enter where ordinary oil cannot go, and it softens the rust quite as well as ordinary oil.

A Large Sale of Seeds.—While we were in a seed store a few days ago one order came from a house in a western city for 2,000 lbs. of one kind of cabbage seed, and 1,000 lbs. of another variety, the whole amounting to about $7,000. At the same time peas were ordered to the amount of over $1,000.



THE GUERNSEY BULL "GYPSY BOY OF WOODLAWN."

Guernsey Cattle—"Gypsy Boy of Woodlawn."

Our readers are aware that there are two breeds of Channel Island cattle, the Guernseys and the Jerseys. The former differ from the Jerseys, which are more widely known in this country, and often called Alderney, in being rather larger and better beef animals.

There has been a feeling widely prevalent that milk and beef were antagonistic qualities—that a good milch cow would necessarily make poor beef. Facts do not sustain this notion. Shorthorns are often great milkers, and such cows, when dry, fatten well. The Dutch cattle fatten well also, and so do the Devons, and yet both, especially the former, are famous for milk. The Guernseys have been bred for milk and butter, and at the same time for beef points. The yellow color in the skin and in the butter has also been cultivated, so that it is exhibited in an extraordinary degree. The cows average fully one-fourth and possibly one-third heavier than the Jerseys, and give on an average a proportionately larger quantity of milk. After they have been longer tested, no doubt there will be found many cows which will compete closely with the famous Jerseys now so well known as great milkers and butter cows.

Persons who have attended the cattle shows and fairs of northeastern Connecticut, the State Fair of that State, and of the New England Agricultural Society for the last two or three years, can hardly fail to have taken note of Col. Warner's noble Guernsey bull, whose portrait we give herewith. He has, we believe, won *first* in every ring in which he has been shown since he was a yearling, and has taken several sweepstakes prizes besides. So remarkable has been his career as a prize winner that his list of triumphs is one to gladden a breeder's heart.

"Gipsy Boy of Woodlawn" is of a rich yellow color, flecked with white, with pale muzzle, having a massive frame well filled out as to beef, and at the same time with admirably marked milk points. He has a broad and high escutcheon, a coat like velvet, and a hide mellow and pliable, soft and elastic to the touch. This, especially where the hair is white, shows that intense yellow "yolk" valued by Guernsey breeders, and is seen notably within the ears. His short-curved waxy horns are also stained with yellow. It is no wonder that with so many most attractive points he has taken the Judges, as it were, by storm.

Col. Warner's herd is on his fine farm in Windham Co., Connecticut, a number of his milch cows being among the most famous Guernseys in the country.

How Much Land for Each?

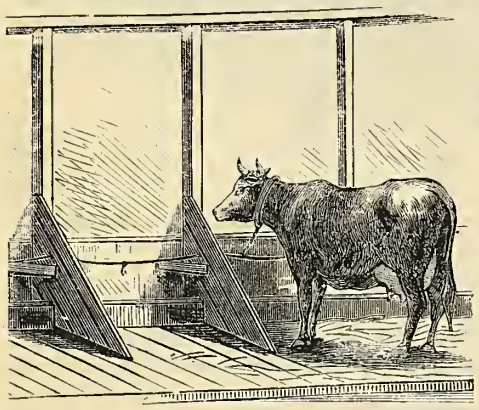
The recent Census gives the total area of the United States (not reckoning Alaska) at 3,025,600 square miles, of which 55,600 square miles are occupied by water—lakes, rivers, bays, etc.,—leaving 2,970,000 square miles of land, or 1,900,800,000 acres.—The total population (see February *American Agriculturist*, p. 146) is 50,155,783. This land, evenly divided, would give to every man, woman, and child 37¾ acres, and an onion patch 3 by 9 rods, over. If we divide the population into families of six persons, each family could be allotted 227 acres. Allowing one quarter of the land to be mountain ridges, sandy and stony tracts, and other "bad lands," there would still be left the regulation "quarter section" (160 acres) for each family.—But

the census figures now being made up are for June 1880. Since then over one million people from foreign lands "have come to stay," as American citizens, and the natural increase has been considerable; the total increase from 1870 to 1880 was 3 per cent per annum. So we have now (March 1, 1882) nearly fifty-four million inhabitants. As the area of land does not expand, there are now less than 36 acres each, or not 220 acres per family, and the average amount is rapidly decreasing.—No cause for alarm, however. With the best culture, one acre will supply plenty of food for one person, and at this rate we can allow more than four hundred million acres for waste land, and still have an acre each left for the estimated entire population of the globe, which is somewhat over fourteen hundred millions. This *is* a great country! Thanks for the iron sinews of the hundred thousand miles of railway lines, and the nerves of the network of telegraph wires, and the speaking tubes of the postal department, we are, as a people, brought into one closely *united* family occupying UNCLE SAM'S GREAT FARM.

Another Cattle Tie.

PROF. E. M. SHELTON, KANSAS AGRICULTURAL COLLEGE.

Judging from the numerous stanchions, and arrangements for fastening cattle in stalls, illustrated from time to time in the public prints, the perfect cattle-fastening has not yet been invented. Nor do I claim perfection for the arrangement given in the accompanying engraving, but it will be difficult to devise a cheaper one, and I doubt if any better or more satisfactory one is in use. I have employed this tie in the college barn



PROF. SHELTON'S CATTLE TIE.

for over four years, and although before this I had stanchions and various expensive ties by chains and staples, I would not exchange this for any other. The fastening consists of a $^3/_4$-inch rope, which is run through the partitions of the stalls, one long rope being used for the tier of stalls, although short pieces may be employed if desired. This rope is knotted on either side of each partition, and a good swivel snap for use with a rope, is tied in the rope in front of the center of each stall. The rope should pass over, very nearly, the front of the manger—from the side of the cattle—and for cattle of ordinary hight, it ought to be about two feet from the floor. When put in, the rope should be drawn up tightly, as it will soon acquire considerable and sufficient slack from the constant strain from the animals. With this arrangement each cow must be provided with a strap or rope about the neck, the rope or strap being supplied with a free moving iron ring. When the animal is put in the stalls the snap is fastened in the ring, and if the snap is a good one—none but the best swivel snaps should be used—an animal will rarely get free from it. This fastening, it will be noticed, admits of considerable fore and aft motion, and but slight lateral movement. The cost of this arrangement it is difficult to state accurately, it is so small. The rope for each stall will cost less than five cents; the snaps will cost just ten cents when bought by the dozen, and the time of putting these fittings in each stall is less than fifteen minutes. The rope will wear two years at least.

Experiments with Milk.

DR. E. H. JENKINS, CONN. EXPERIMENT STATION.

Some years since Prof. Fleischmann made a series of very careful observations and experiments on the setting of milk, which contains some valuable hints. They were planned to test the merits of the Swartz (deep setting and low temperature) and Holstein (shallow setting with medium temperature) systems. By the Swartz method milk is set in vessels 16 to 18 inches deep, which hold about 16 lbs., and is cooled with ice water to 35°—40° Fahrenheit. By the Holstein method the milk is set in shallow pans, so that it is not more than 2 inches deep, and is cooled from 54°—59° Fahrenheit. The results of a single series of very carefully made trials are here given :—

	Per cent of fat in the milk.	*The per cent of total fat in the milk which was skimmed in the cream after*		
		12 *hrs.*	24 *hrs.*	36 *hrs.*
Deep set, morning milk.....	3.26	75.2	86.6	87.4
Shallow set, morning milk....	3.26	81.6	85.3	91.4
Deep set, evening milk.....	3.05	82.8	92.0	92.1
Shallow set, evening milk....	3.05	86.8	85 5	90 1
Deep set, morning milk.. ..	3.44	89.8	91.6	92.6
Shallow set, morning milk....	3.44	77.7	88.8	89.4
Deep set, evening milk.....	3.04	82 2	87.7	88.6
Shallow set, evening milk....	3.04	74.4	90.1	92.8
Average—Deep set.... ...		82.5	89.5	90.2
Shallow set.....		80.1	87.4	90.9

The average depth of the deep set milk was 16 inches, and the average temperature when skimmed 40°. The average depth of the shallow set milk was 2 inches, and the temperature when skimmed 57°.

The deep setting gave about 2 per cent more fat after 12 and after 24 hours; in 36 hours the shallow setting gave a very little more than the deep. These results, with others, show that it did not pay to let deep set milk stand more than 24 hours. Shallow set milk should stand, if possible, 36 hours.

The much vexed question which suggests itself here—What is the best temperature for raising cream?—is not quite fairly put. In setting milk we do not have a constant temperature. From the time the milk leaves the udder, its temperature sinks more or less rapidly from hour to hour to a minimum, and only after reaching that does it remain tolerably constant. The question rather is: Does rapid or slow cooling give the larger yield of fat within a reasonable time? Results show quite conclusively that rapid cooling is preferable. The quicker it cools, the sooner will currents in the milk to and from the surface be checked, and the fat globules be left to move freely to the surface. If, however, the cooling is carried very near the freezing point, the milk serum becomes thicker in consistence, and almost prevents the globules from rising. This effect we see in the results above. The deep set milk reached its minimum, 8° degrees above freezing, in 24 hours; and in the next 12 hours only $^7/_{10}$ per cent of fat arose, while in the other case where the minimum temperature was 25° above freezing, $3^1/_2$ per cent of fat rose in the same time.

There is one danger to which deep set milk is exposed in a greater degree than shallow set, and to the causes of this trouble Fleischmann devoted considerable study. It sometimes happens that milk, normal in appearance and with the normal content of fat, separates its cream very slowly and incompletely—more slowly when deep than when shallow set. This temporary disturbance has been often observed, and since it occurs most frequently in autumn, many believe that in general the milk of cows near the end of lactation has this quality. A trial with three cows old in milk, and three newly calved, seemed to indicate that if this trouble is more frequent with cows old in milk, it is not by any means confined to them. In the Raden dairy, where Fleischmann worked, the butter produced by the herd began to fall off rapidly in the second week in October, a time when many cows were towards the end of lactation, and the change was being made from summer to winter feed. It did not come up to the previous yield until December. The same thing happened again in the following spring. On May 5th the decline began, and to make 1 lb. of butter were used:

On May 20.....38 lbs.	On May 24.....33.6 lbs.
On May 21.....42.6 lbs.	On May 25.....25.0 lbs.
On May 22 .....40.9 lbs.	On May 26..... ...23.0 lbs.
On May 23.....35.3 lbs.	

The herd had been stall fed until the 24th, when they went to pasture, and in this herd of 128 apparently healthy cows, the yield of butter increased 85 per cent within 6 days! At this time the majority of the cattle were 4 or 5 months in milk. Evidently the incomplete separation of cream in the fall and spring had no close connection with the changing phases of lactation. Neither was there any disturbance in the management of the dairy. The milk had all the time been treated uniformly. Nor was this remarkable falling off a result of poorer feeding. On the contrary, the ration had been improved by substituting red clover for straw, and the yield of milk had increased at the time when the yield of *butter* sank so remarkably.

It remained then to consider whether there was anything in the keeping of the cattle which might explain the cause of the trouble. In October of the previous year the decrease in the yield of butter began just as the animals were put on to their winter feed. The microscope showed that the fat globules were not separate, as in normal milk, but cohered in little bunches which, of course, would rise slower than the separate globules. The herd received, in their ration, chaff from grain which had rusted badly, and dust from this settled in the milk and presumably was the disturbing cause. As spring came on, litter had to be economized, and in spite of all pains the stable became more and more unclean, and the milk was affected by it. In the morning, milking had to be done before cleaning out the manure, and though it was strained there and at the dairy, it was not as clean as the night's milk, and gave less butter, quart for quart. While this matter of the tardy rising of cream requires further study, the author offers these suggestions with regard to it. We know what a delicate index of a cow's health the milk

secretion is, and that the energy of the milk gland suffers whenever any error is made in the feeding or care of the animal. We have reason to believe that the varying energy of the action of the gland may impart varying properties to the milk. A slight derangement in the animal may not change the relative amount of the different proximate elements of the milk—ash, casein, sugar, etc.—that is, an analysis would show nothing abnormal, yet the qualities or properties of those elements may be seriously affected, *e. g*, the casein may be more or less perfectly dissolved, the fat globules may cohere in numbers, etc. We cannot get good milk unless the function of the milk gland is entirely undisturbed, and degeneration of the tissue goes on to its last stages without check.

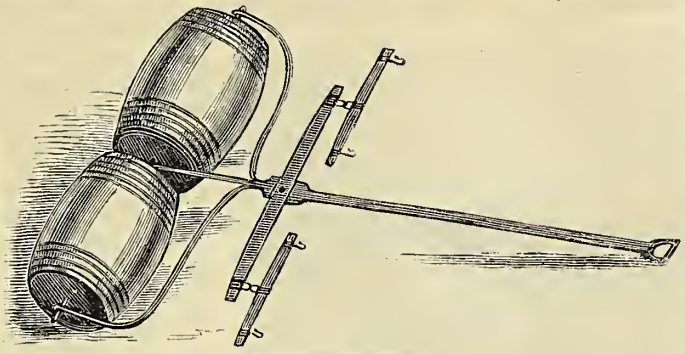
Very probably the quality of milk suffers whenever the food or drink disturbs digestion, or its taste is not pleasant, or the general care of the animal is defective. That an animal cannot feel well, and cannot produce normal milk when for days and weeks it has no dry bed, or when its flanks are covered with a crust of manure, needs no proof. The author is inclined to attribute the tardy and incomplete rise of cream to an abnormal and unhealthy state of the animals, produced by errors in feeding or care.

Bracing a Ladder.

Mr. W. D. Morton, Lapeer Co., Mich., writes: "In using a ladder, the side swing is disagreeable, especially when it is made very light. A young mechanical friend mentioned that such a ladder could be stiffened by drawing in the middle, until the upper end was parallel, and bracing the lower end with ½-inch stuff, as shown in the accompanying engraving. It was altered, accordingly, in a very short time, and I was so astonished and pleased at the difference in stiffness, that I wish all who have occasion to use a ladder, to have the benefit of it. It is really worth trying. Where the braces cross, they should be nailed to one another with a few wrought nails, clinched. The steps must be let into the side pieces ½-inch, and well nailed, making a tight fit, and the braces should be nailed to the steps where they cross them." There should be upon every farm one or more ladders long enough to easily reach the tops of the highest buildings.

A Barrel Roller.

Mr. G. W. Stonecypher, Dawson Co., Neb., sends a sketch of his home-made roller, which he describes as follows :—The roller is made of two coal-oil barrels, filled with soil or sand to give them weight. An iron shaft passes lengthwise through the center of each barrel, upon which they revolve. Two bent bars of iron connect the ends of this shaft with the tongue. Another bar, forked at one end, connects the middle of the shaft with the tongue. The hoops of the barrels should be nailed on; the earth in the barrels needs to be kept moist by occasionally adding a little water. A single barrel may be arranged in much the same way. Such a roller can be used as a "marker" by fitting circular pieces



A BARREL ROLLER.

to the ends of the barrel, or wherever it is desired that the lines be made, placing projecting hoops the proper distance apart.

Lime and Limestone.

We gave our views of the uses of Lime and Limestone in February of last year. So many new readers however have seen the claims made by those who are interested in advocating the use of ground Limestone as a fertilizer, and have forwarded inquiries, that it becomes proper to say something at this time. In the first place, limestone, marble, calc-spar, chalk (of rare occurrence in this country), marl, and oyster, and other shells, are all essentially the same in composition, however they may differ in texture, form, and other particulars. They are all different forms of the Carbonate of Lime; that is, they consist of the alkaline earth, lime, in combination with carbonic acid, and in the case of shells, with animal matter. As a general thing, we only know carbonic acid as a gas. It has a very weak hold of the lime, for if we drop a fragment of limestone into strong vinegar, the acetic acid of the vinegar will unite with the lime (forming Acetate of Lime), while the carbonic acid, being set free, will be seen to pass off in small bubbles. In this case we free the lime from its carbonic acid, by presenting to it a stronger acid, that of vinegar. But if instead of using another acid to displace the carbonic acid, we place limestone, in any of its forms, in a strong fire, the carbonic acid will be driven off by the heat, and there will be left, simply Lime. This is called Quick Lime, or Caustic Lime, and by chemists Oxide of the metal Calcium, or Calcium Oxide. Lime, then, is limestone without its carbonic acid. All the forms of limestone are very little soluble in water; lime itself is more soluble, though but slightly so, requiring at ordinary temperatures about 700 times its own weight of water, yet it gives a marked alkaline taste to water in which it is dissolved. Lime in this condition, as Quick Lime, or when combined with water, "slaked" as it is called, is much employed in agriculture. A small portion of lime is required by plants, but the chief use of lime, when applied to the soil, is to bring the vegetable matters contained in the soil into a condition in which they can be used as plant food. This application of lime as a fertilizer has long been followed by farmers, and in many cases with the most beneficial results. Within a year or so, great claims have been made for ground Limestone, especially by the makers of mills for grinding it; some of these have asserted that it was superior to burned lime, and superior to nearly all other fertilizers. The question which most interests farmers is, has limestone, however fine it may be, any value as a fertilizer? To this the answer would be both yes and no. Upon a heavy clay soil the carbonate of lime, or limestone in any form, appears to have a beneficial effect; it makes such soils friable and open, so that water and air may penetrate them. While its action upon the vegetable matter in the soil is far less prompt and energetic than that of quick lime, yet its presence, affording a base with which any acid that may be present in the soil may unite is often beneficial. To extol ground Limestone as "the great fertilizer of the age," to even claim that it is equal to lime itself, is a mistake. Both have their uses. It should be borne in mind by inquirers about the value of ground limestone, that many soils already contain more lime in this form than can ever be utilized, and need no addition.

Early Spring Chicks.

BY D. Z. EVANS, JR.

In breeding poultry, no matter whether they are the high-priced thorough-bred stock or not, the main idea with all is usually one of profit, and the proper way to commence as well as carry it out, is to try to make a fair profit, even if all the surplus stock is sold in the open market at ordinary fowl-meat prices, and not at the usual advanced prices obtained for fine, pure-bred stock. Where this is done, there is rarely, if ever, any reasonable cause for dissatisfaction. Where a person has the conveniences, there is no way in which as much profit can be made from poultry as breeding extra early spring chicks, those which are ready to market with early Asparagus, and weigh from two to four pounds per pair or more. There is always a large demand for these young "broilers," and at prices which are not merely entirely satisfactory to the breeder, but astonishing to those who are new to the business. As they are marketed when about three months old, they have cost but little for food, and pay double and treble the profit they would if kept until fall and then sold in the market at a dollar apiece, which price is much above the average. Aside from this, the loss from accidents and sickness, which is no inconsiderable item, between the ages of three months and eight or nine months, is avoided.

A special house or room is to be devoted to the use of the young chicks, and must be artificially heated, the temperature being kept comfortably warm. The utmost care and attention should be paid to cleanliness, while the feeding must be regular and frequent. The setting hens do not require a warm room, but the young chicks do, as soon as ready to be taken from under the hen. The floor of the house should be kept covered with fine, dry sand, and the heat in the house may come from a coal stove, which maintains a more equable heat and is less dangerous than a wood fire. The best food for the

young chicks, at first, is stale bread crumbs, moistened (not wet) in fresh, sweet milk. No water should be given until the birds are at least two or three weeks old. Until the chicks become fully feathered, but little corn meal should be fed, and that well cooked, the main dependence being placed on stale bread and fresh milk, "Cottage Cheese," cracked wheat, rice, oaten grits, etc., which are most excellent, and not so heating as corn meal.

New Jersey, is "somewhat" of a State, though making little noise in the world—perhaps because wedged in between the great Empire and Keystone States, with the two greatest cities of the country, New York and Philadelphia, close upon its borders to divert attention. In area it covers five and one-third million acres (8,320 square miles). It stands exactly in the middle as to population, there being 18 States having one million inhabitants and upwards, and 18 States with less than nine hundred thousand, New Jersey having 906,096, or 108 to each square mile—about 5⅞ acres to each inhabitant.—The assesment of taxable property just completed amounts to $527,451,222, an increase of 9½ million dollars during the year. The real property exceeds one billion dollars, as the assessed valuation in some counties is scarcely 25 per cent, and in few exceeds 50 per cent. This amounts to an average of over $1,100 for every man, woman, and child in the State. There are 21 counties, the wealthiest, Essex, assessed for $108,494,000, and the poorest, Cape May Co., for only $3,525,625.

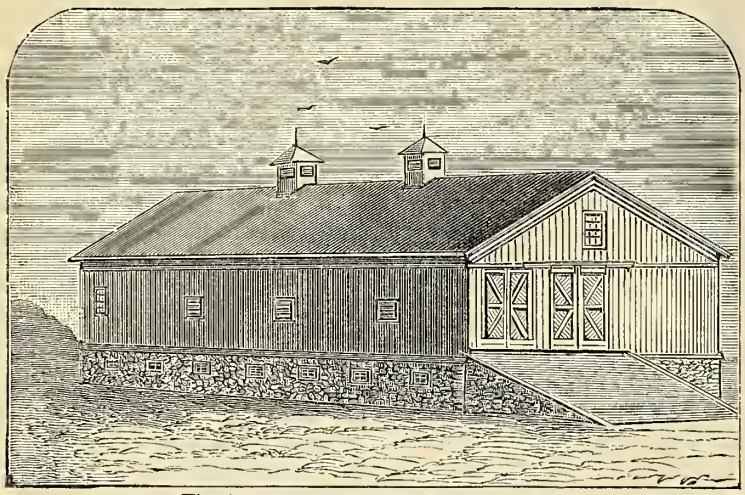


Fig. 1.—FRONT ELEVATION OF THE BARN.

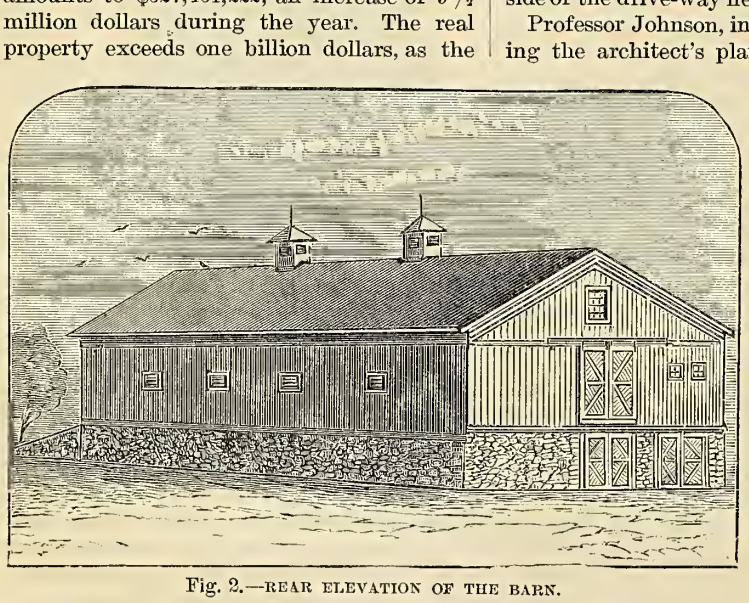


Fig. 2.—REAR ELEVATION OF THE BARN.

A Grain and Stock Barn.

In the accompanying engravings we present the barn recently erected by Prof. S. Johnson at the State Agricultural College Farm, near Lansing, Mich. The building is for storing hay and grain, with basement so arranged that a good part of it may be used for keeping live stock. Figure 1 shows the front elevation of the barn in perspective, and the rear end and other side are given in figure 2. With these engravings very little is required to be said as to construction of the barn and general appearance. The plan of the basement is shown in figure 3. In this there is provision for two rows of cattle stalls. A silo, 15 by 18 feet, for the preserving of grain fodder, occupies one corner. The two small squares, 4 by 4 feet, show the position of ventilators, which also serve as shutes for the descent of hay, straw, etc. The second floor is seen in figure 4, with its drive-way 14 by 80 feet running the whole length near the center of the barn, with a tight floor above with the exception of 16 feet. On one side is a large bay going down to the basement floor. The granary, 13 by 22 feet, and 10 feet high, occupies one end of the wheat mow; it is ceiled with matched oak. The mow is 13 by 58 feet to the top of the granary, where it extends the whole 80 feet, or length of the barn. There are also two feet on the mow side of the barn of the same size as those in the bay. The position of the stairway to the basement is shown at one end of the bay, and by the side of the drive-way near the entrance doors.

Professor Johnson, in his notes accompanying the architect's plans says: "The drive-floor runs the long way of the barn, to give room for the machine and straw-carrier inside when threshing. The grain will be stored in the mow and above the drive-floor on the south end. In threshing, the straw-carrier will convey the straw to the floor over the north end of drive-floor, from which it will be distributed to the bay so as to keep all straw inside. The mow will then be clear to receive corn, straw, and other forage crops. The cost of the barn, with two coats of paint, will be about eighteen hundred dollars."

Watering House Plants.—There is but one time for watering plants, that is—when they need it. If the soil in a pot is already moist, do not give it more water. If the earth is very dry and packed hard, plunge the pot in a pail of water and let it soak.

Fodder Rations and Feeding Values.

BY DR. M. MILES, DIRECTOR OF EXPERIMENTS AT "HOUGHTON FARM," N. Y.

What is the relative value of corn meal, linseed-cake meal, and cotton-seed-cake meal as cattle food? The answer to this question involves a consideration of the principles that are applied in determining the value of all foods, and the relative influence of their constituents in the varied processes of animal nutrition. Twenty-five years ago we were told that the nitrogen of foods was the measure of their nutritive value, and tables of food equivalents on this basis were published. According to this method cotton-seed cake would have a higher value than linseed cake and the latter would be decidedly better than corn meal. In this plan of determining the relative value of foods it was assumed that their nitrogenous constituents were the only substances that could aid in the process of nutrition, and they were therefore called "flesh formers," while the non-nitrogenous constituents, which were supposed to serve as fuel to keep up the animal heat, were called "combustive," or "heat-producing" elements.

This theory was for a long time a popular one, as it seemed to give a very simple ex-

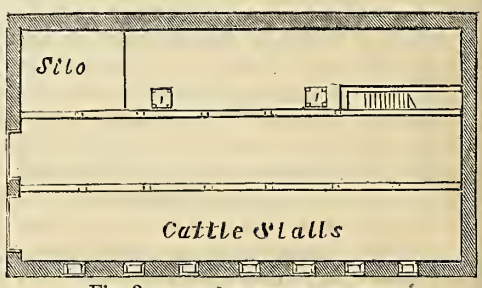


Fig. 3.—PLAN OF THE BASEMENT.

planation of the physiology of digestion and of the economy and relative value of foods. It was, however, a mere assumption that failed to stand the test of experience, and the carefully conducted experiments on animals, that were made by physiologists, furnished abundant proofs that it was not true. A simple illustration of the failure of this old theory to account for observed facts is given. In the feeding experiments that were conducted at Rothamsted, by Lawes and Gilbert, on an extended scale, it was found that the comparative value of ordinary cattle foods depended more upon the proportion of digestible non-nitrogenous substances than

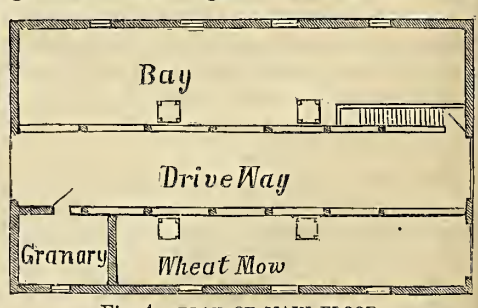


Fig. 4.—PLAN OF MAIN FLOOR.

upon their richness in nitrogen. From these experiments and from other special physiological investigations we now know that the non-nitrogenous constituents of foods have important parts to perform in the strictly

nutritive processes, and that they are not "burnt," as in a furnace to keep up the animal temperature. In fact there is no evidence that anything like a combustive oxydization of the fluids or tissues takes place in any part of the system. The oxygen taken in by the lungs in the process of respiration, must now be looked upon as a nutritive element, or in other words as food that is essential to the healthy activity of all the tissues of the body. In connection with other nutritive materials, finding their way to the blood through the digestive organs, it is stored up and takes part in the formation of the organs of the body and aids in the performance of their several functions. The carbonic acid, that is exhaled as an excretory substance by the lungs, is not formed directly by a simple union of oxygen and carbon, as was formerly supposed, but is one of the products of disintegration, or splitting apart, as it were, of the tissues which are constantly undergoing the process of decomposition and repair, that is characteristic of all living tissues. In the taking in of oxygen, by the lungs, and the exhalation of carbonic acid, we therefore see but the beginning and the end of a long series of changes and transformations of organic materials that constitute the entire activities of the system.

The fallacies of the "combustive theory" of respiration have undoubtedly been obstacles to the proper understanding of nutritive processes, and the relative value of the constituents of foods. Foods are composed of proteids, or albuminoids, carbohydrates, fats, and inorganic or mineral matters. The proteids, or albuminoids, as they are often called, are substances that resemble albumen in composition, as various forms of albumen, casein, fibrin, legumin, etc., and they all contain nitrogen. The proteids therefore constitute the nitrogenous group of nutrients. The carbohydrates are the substances that resemble starch in composition, as cellulose or woody fibre, starch, sugar of various forms, of gums, etc. As the carbohydrates and fats contain no nitrogen, they are often called the non-nitrogenous group. The part taken by each of these nutritive elements, cannot, in the present state of our knowledge, be fully traced, but they all seem necessary to form what may be called a perfect food. The proteids are essential in the construction or building up processes of all tissues. Every cell of the animal body, whether of muscle, or nerve, or fat, or of secreting glands to prepare the various digestive fluids, or of the excretory glands that throw off the waste products of the various organs, must have a supply of proteids, or it cannot perform the functions required as a part of living tissue. Even fat itself may be formed from the proteids, and it seems probable that the butter globules, or fat of the milk, is largely, and perhaps almost entirely formed by a transformation of proteid materials. Voit, from experiments with dogs, reached the conclusion that all fat was formed at the expense of proteids, even in cattle and swine, but Lawes and Gilbert, in their extended and accurate feeding experiments have proved that at least 40 and in all probability more than 50 per cent of the fat laid up by pigs on a good fattening diet, must have been formed from carbohydrates. An animal can live for some time on an exclusive diet of proteids, as they seem to have the power of taking upon themselves the parts more economically performed by the carbohydrates and fats, in addition to their own peculiar functions.

[The discussion of this important subject may be resumed another month.—EDS.]

Silk Worms and Their Food.

The *Morus multicaulis* craze of about fifty years ago so disgusted people with everything related to silk raising, that whatever progress had been made before that time went for nothing. Within a few years there has been a renewal of interest in silk culture, which, if allowed to develope in a healthy manner, will lead to good results. As indications of this revival, we note: The Special Report of Prof. C. V. Riley, Entomologist to the Department of Agriculture, published in 1879; and the formation of a Society in Philadelphia for the promotion of Silk Culture. Before this reaches our readers, this Society will have held an exhibition, and awarded premiums for the best lots of cocoons raised by women in Pennsylvania, and by colored women in any State. This Society touches the key-note of the success of silk culture in this country, and the same is advocated by Prof. Riley in the Report just referred to, *i. e.*, that silk culture must be a family industry; the care and feeding of the worms must be done by the women and children, and by others whose old age or feeble condition do not allow of active labor.

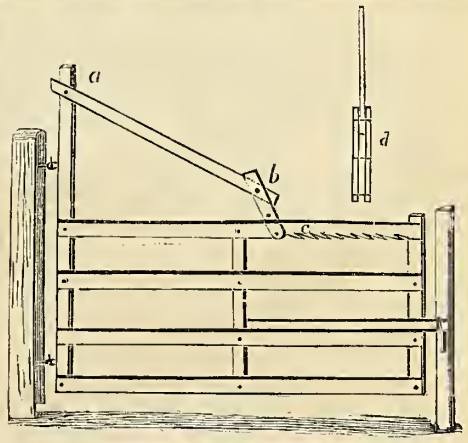
Silk culture can not be carried on by companies with hired labor, but to gain a permanent foothold and be profitable, it must be accepted as a part of the farm work, just as are the care of poultry or bees, the making of butter and cheese, or in some localities the production of maple sugar. Carried on in this manner, the required labor will not be taken from any other industry of the farm, as it may be done by those unfitted for hard work, and while the annual income in each case may not be very large, it may be an important addition to the family purse, and in the aggregate add largely to the prosperity of the community. That a renewed interest is now felt in Silk Culture is shown by the inquiries that come to us as to where the eggs of the silk-worm may be procured. These letters often indicate that the writer has not considered the more important question of the food supply for the worms that are to be hatched from the eggs. We shall gladly encourage a healthy development of this industry, and are sure that the best service we can at present render to those who are desirous of undertaking silk culture, is to direct their attention to the matter of food for the worms. This must of course precede everything else.

The true silk-worm can prosper only upon the leaves of some kind of Mulberry; it does fairly well on the leaves of the related Osage Orange, and the worms, when very young, may be kept alive on Lettuce leaves, still the Mulberry is the best food. Upon many places there are old Mulberry trees, left as a memento of the *Moro-mania*, as the multicaulis speculation has been called. Where such trees exist they will afford a supply of food for a beginning, and to raise a stock of worms to lay eggs for future operations; but the labor of collecting leaves from old trees is too great to be profitable. Where there are already established hedges of the Osage Orange, the raising of silk-worms may be undertaken, as with proper care success will follow. But if a food supply is to be provided, let it be some form of the White Mulberry (*Morus alba*). The French writers enumerate twelve varieties of the White Mulberry, and several of *Morus multicaulis*, but this last is by the best authorities regarded as a variety of the White Mulberry, and so is the *Moretti*, another kind valued as food for silk-worms. The Mulberry is grown from the seed, from cuttings, and by layers, etc.

We need consider only the first two methods. Our dealers in tree seeds offer the seeds of the common White Mulberry, the Multicaulis, and the Moretti, the last two varieties coming sufficiently true from seeds. The seeds may be sown like those of ordinary garden vegetables, in good soil in early spring in drills 18 inches apart, and when large enough, the young plants thinned to three inches and kept free from weeds. They are usually left in the seed-bed for two years, mulching the ground heavily at the approach of winter; after which they are set in the plantation. Where cuttings can be procured, this is the best method of raising the trees. Shoots of the previous year's growth are made into cuttings about 6 inches long, making the cut just below a bud; these may be set in the fall, or early spring, putting them 3 or 4 inches apart in the row, leaving but one bud above ground; the rows should be far enough apart to work with the cultivator. The next year the young trees may be set where they are to grow. Whether seedlings or rooted cuttings are planted, they may be set out in hedge rows, or a piece of ground be given up to the plantation. In either case they should be 6 to 10 feet apart, and are to be kept low, in order to allow of the easy gathering of the leaves. The main stem may be but a foot or so high, or 6 feet high, as circumstances require. When the trunks are of the last-named hight, the trees are treated as described for Pollard Willows, in an article on page 110.

A "Sagging Bar" for Gate.

Mr. J. Meyer, La Salle Co., Ill., sends a sketch and description of a device for overcoming the sagging of a gate. The hinge-post of the gate-frame extends somewhat



A REMEDY FOR A SAGGING GATE.

above the upper bar of the gate. A board is fastened to the top of this post, *a*, which runs downward to *b*, near the middle of the upper cross-bar, and then connects with a short double band—one on each side of the long board—which is provided with a bolt fitting into notches, *c*, cut in the under side of the upper bar of the gate. The form of the double-latch piece, with its bolts, and its attachment to the board is shown at *d*.

Feed Boxes.

BY L. D. SNOOK, YATES CO., N Y.

At the request of several readers of the *American Agriculturist*, I present various forms of feed boxes for cattle, etc. The requests were for boxes that could be easily

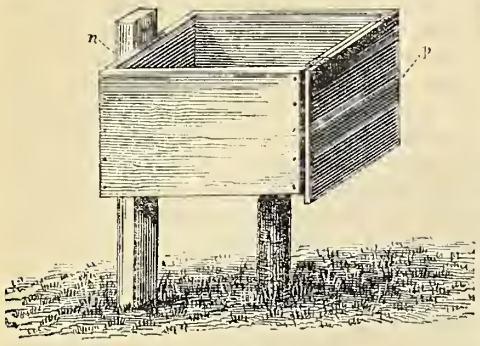


Fig. 1.—COVERED FEED BOX.

cleaned, and I have no doubt but some of the forms here given will prove satisfactory. In figure 1, a box is shown firmly attached to two posts. It has a hinged cover, *p*, that folds over, and may be fastened down by inserting a wooden pin in the top of the post near *n*. The one given in figure 2 may be placed under shelter, along the side of a building or fence. One side of the top is hinged to the fence or building, the bottom resting upon a stake, *e*. When not in use, the box may be folded up, the end of the strap, *b*, hooking over the pin *a*, at the side

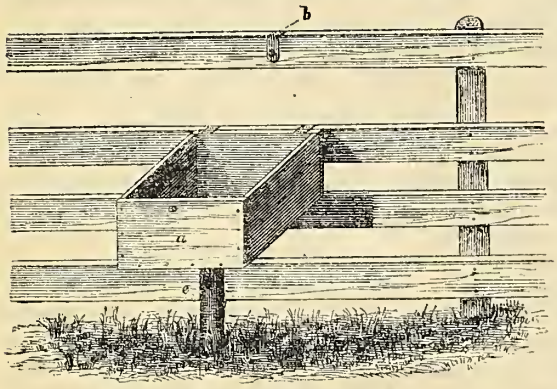


Fig. 2.—HINGED FEED BOX.

of the box. A good portable box, to be placed upon the ground, is shown in figure 3. It is simply a common box with a strip of board, *h*, nailed on one side, and projecting about eight inches. When not in use, it is turned bottom up, as shown in figure 4. The projecting strip prevents three sides of the box from settling into the mud or snow. The strip is also a very good handle by which to carry it. Those who now use portable boxes will find the attaching of this strip a decided advantage. A very serviceable portable feed box is made from a section of half a hollow log, with ends nailed on as shown in figure 5. By letting the ends project above the sides four or five inches, it may be turned

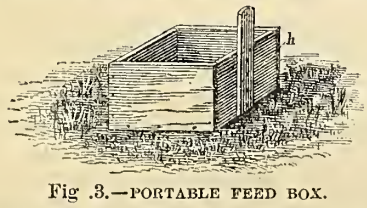


Fig .3.—PORTABLE FEED BOX.

over when not in use, and easily turned back by grasping the sides without the hand coming in contact with earth or snow. All feed boxes and racks should be placed under shelter during summer, or when not in use.

The Teosinte in Louisiana.

In January 1880 we gave a figure of a then new forage plant, "Teosinte" (*Euchlaena luxurians*), with an account of its success in Australia and other countries. As it was important, should the plant prove valuable in any part of the country, to learn if its seeds could be perfected here, we undertook to test this point. Mr. Wm. H. Carson liberally supplied us with imported seeds, and we sent samples, early in 1881 to several friends in Florida, Louisiana and other Southern States, with the request that the ability of the plant to produce seeds be tested. The only report we have thus far had, is from T. L. Deacon, Esq., Ouachita Co., La. At our suggestion he started some of the seeds quite early in pots, and when the plants were six inches high, they were set out in the open ground.

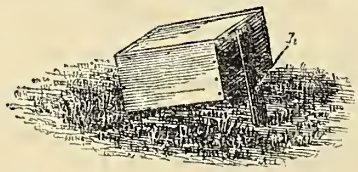


Fig. 4.—FEED BOX INVERTED.

The rest of the seed was sown in drills 2½ feet apart and the seeds 2 feet distant. This seed was long in germinating, but when the plants came up they soon overtook those that were transplanted. The roots are immense, and Mr. D. says that the plants stood the unusual drouth of last summer admirably. The Teosinte gave three good cuttings of fodder and on Dec. 1st was still alive. Several plants were reserved for seed, but as these were unfortunately cut during Mr. D.'s absence, he cannot positively assert that seeds can be ripened with him, but from the appearance of some heads that have grown since Sept. last, he feels very sure that they may be. As to the value of the plant our correspondent says, that we may recommend it to our friends in the Southern States as a great fodder producer; in a rich soil with a hot sun, it may be cut three times in the season; it

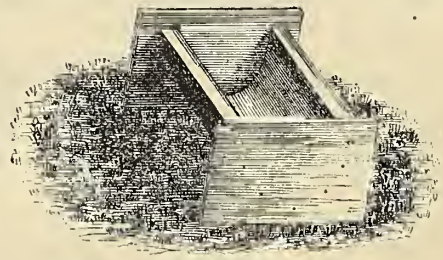


Fig. 5.—BOX FROM HOLLOW LOG.

grows rapidly after cutting, and gives no trouble, save running the cultivator through it a few times. The cattle are very fond of it green or dry. He is so much pleased with the trial that he proposes to have five acres of Teosinte the coming season. We should be glad to learn from our readers how far north the plant can be profitably cultivated.

The Mallard Duck.—The Mallard is the domestic duck in a wild state. It is a marsh duck, and seemingly is never so happy as when half flying, half wading, through weeds, brakes, and lily-pads. Pond-lily seeds, and the animalcules of the muddy waters, are its best food. The meat of the Mallard, and particularly that of the young, is very delicate, being free from the fishy taste and odor common to almost all salt water ducks. It requires a skillful sportsman to make a successful day in hunting the Mallard, it being so watchful, and making such good use of the instincts for self-preservation given to it by nature. The unskillful gunner may steal upon his prey, and imagine that he is unnoticed, but all the time the Mallard has kept one eye upon him, closely observing every movement of the enemy, and as the latter rises for his shot, it sails gracefully away, giving its shrill note of warning to its companions. One writer has well said: "Let no novice, therefore, think to sprinkle salt on the Mallard's tail, or to bag him without a resort to traps and strategy."

Tim Bunker on Points in Deacon Smith's Farming.

MR. EDITOR: — The Committee of our County Agricultural Society, on visiting farms, went to look over Deacon Smith's farm in September, and try and learn something for their own benefit and that of their neighbors. The Deacon is a sort of model farmer among us, and is said to have the best farm in all Hookertown. He is the only man in town that has a bronze cock turkey got up by a taxidermist and kept in a show case among other birds. As the Deacon was to have a big dinner, and entertain a few of his neighbors, I went along with the Committee just to keep them straight, and to prevent any mistakes the Deacon might make in misstatements about the yield of his crops, and the merits of his cattle. I don't mean to insinuate that the Deacon is inclined to draw the long bow, or to exaggerate in his statements, one whit; but you see, even Deacons have the infirmities of human nature, and in the excitement of a visit from the Committee, he might give the facts a gloss that better not go into print. You see, if things get printed there's no end to their circulation. The first point the Deacon made was the value of

A Good Barn.

This he considered the stomach of the farm. Into it all the vegetable products of the farm were gathered, pretty much, and after they had fed cattle, the refuse was lodged in the cellar, to be mixed with straw, muck, headlands, and other absorbents, to make fertilizers and furnish food for the crops. This barn, which he had built the present season, was 41 by 60 feet, and was a great improvement on the old style of barn, which was still standing at quite a long distance from the house. He said, "If men considered the time it takes to fodder cattle three times a day, they would always locate the barn near the house to save footsteps. A half hour saved daily is worth at least thirty dollars a year, and that sum is worth looking at by thrifty farmers. My barn stands upon a ten-foot wall, and is supported by stone and wood posts, so arranged that an ox-cart can be driven under all parts of it. It opens to the south upon the yard, and affords comfortable shelter for the cattle whenever I want them out of the stables. This cellar is my manure factory, and into it

all the droppings of the stock, except the fowls, are thrown. Here is work for rainy days, and there need not be an idle time for the farm hands through the whole year. I consider the manure made under cover worth at least a third more than that which is made in the open yard. The saving is quite as great in the spending of all forage crops. Pine boards closely rabbeted are an excellent substitute for hay and provender. The manure rarely freezes in the stables above, and cattle will thrive better on two-thirds of the rations that are required at the stackyard or in an old shaky barn. The saving in fodder and in fertilizers in a few years will pay the whole cost of a barn."

At the south end of the barn was the turkey roost, and this led to inquiries about

The Turkey Crop.

Deacon Smith says: "Only farmers with a good range should undertake to raise this crop. On small farms, with near neighbors, they interfered very much with cultivated crops, and not infrequently lead to neighborhood feuds. But on my farm of 220 acres, and with a range of thirty acres of woodland, largely stocked with oak and chestnut, I consider them one of the most profitable crops I can raise. I hold to breeding from the heaviest stock I can get, and as a rule prefer to use two and three-year-old cocks and hens. I bred two years ago from a two-year-old cock weighing 42 lbs., and the present season from one of his chicks that weighed 30 lbs. when he was ten months old The best of my hens weighed 24 lbs. I weighed several of my young birds last November, when about six months old, and found young cocks weighing 22 lbs., and hens weighing from 15 to 19 lbs. They had not been fattened, and were not ready for market. I find on reference to my note book, that the turkey crop has paid fairly. I have usually left from eight to eleven hen turkeys for breeders, and have raised from 99 to 137 in a season. In 1868 I sold my turkeys for 27 cents a pound; they amounted to $380.40. In 1869 I sold for 25 and 27 cents a pound; gross amount of sales $386.18. That year I kept an account of expenses and calculated the net profit at $213.58. In 1870 I sold for 25 cents a pound; amount of sales $311.37. In 1871 I sold for 18 cents a pound; gross amount of sales $286.13. I would rather raise turkeys and sell at 15 cents a pound than raise pork and sell at ten cents a pound."

Clean Hay and Hay Seed.

Deacon Smith next took us out into one of his meadows. He has about 75 acres in mowing, all remarkable for their clean cultivation. There are no wild cherries, hazel nut bushes, or other shrubs and briers along the walls. It is unbroken sod close to the wall, and no dock, catnip, nettles or daisy are tolerated. Said the Deacon, "when I took charge of the farm my father said to me, 'my father bequeathed to me only four daisies and I give to you only two.' I have gone upon the principle of allowing only one to go to seed, and that is the one that I cannot find. It is comparatively an easy job to keep a clean field, clear of daisies, or white weed, and other foul stuff that damages the hay. As soon as these weeds are fairly in blossom, lose no time in going through the fields and pull every weed by the roots, and carry it to the compost heap. Then if you save your own Timothy seed, and red-top and clover, you have a clean sod to start with, and foul seed can only come in on the wind, or by the brooks that run through your fields. A little watchfulness at the right time keeps the meadows clean and gives your hay and clover seed a high reputation in the market, which commands the best prices." He next called the attention of the Committee to his

Irrigated Meadows.

A small brook runs through the farm, not half large enough for a mill stream, in most seasons, running through the summer, but occasionally dried up as in the past season. He has utilized this stream by turning the water into irrigating ditches and greatly increasing his hay crop. The ditches for carrying the water are of the simplest kind, no effort having been made to gather up the water of irrigation, and use it a second time, on the lower parts of the field. The same lot of about six acres is thus irrigated by passing it in a single ditch around the upper edge, thus only the higher portion of the field is thoroughly irrigated, except in winter when the ground is frozen and the water is kept on the surface. There is the same arrangement on a seven-acre meadow further down the stream, which receives a larger portion of the water. This is considered the most productive in hay, of any lot upon the farm, and yields at two cuttings—three tons to the acre. These lots keep in good condition without any top-dressing, though this would add very much to their yield and as a matter of course, they would pay better dividends.

Tile Draining

is another of the Deacon's strong points in husbandry. He has about ten acres of once swampy land, too wet for cultivation, underlaid with tile. This was done many years ago, and has made fields, once poor pasture, among the most productive on the farm. It is kept in grass, and yields readily about two tons of hay at one cutting, every year. Deacon Smith has drained nearly all the wet places upon his farm, and is an enthusiastic advocate of underlaying the soil with crockery.

A Reformed Alder Swamp.

In the south part of the farm was an alder swamp. A railroad crosses the upper end of this swamp, and to perfect its drainage it was necessary to cut through it a broad ditch eight feet deep. This so completely took the water off that the swamp has become dry land. It was cleared of roots and rocks, cultivated a few years, and laid down to grass, and now yields two tons of hay to the acre without top-dressing. The area of this lot is about ten acres, and tile have not been used upon it. As an example of the working of deep drains, this lot is worth a good deal to the public. The Deacon has been a diligent reader of the *American Agriculturist* for thirty years, and his farm may be considered a good card for this paper.

Hookertown, Ct., January 15, 1882. } Yours to command, TIMOTHY BUNKER, Esq.

Cold Frames.—The novice in the management of cold frames, is more likely to meet with difficulties in the month of March than at any other time. During steady cold weather it is but little trouble to keep the plants properly dormant, but in March we are apt to have violent alternations and spring-like days may be suddenly succeeded by a cold as severe as any of the preceding winter. One should always keep in mind that the object of the cold frame is to keep plants from growing as well as to preserve them from severe freezing. In many localities the weather will allow the cabbage plants to be set out during the latter part of this month, and in these the plants should be prepared by hardening them, which is done by removing the sashes altogether when the temperature is no lower than 30°, and when below this, they are to be opened more or less. Even when the temperature is as low as 10°, some air must be given, by slightly tilting or shoving down sashes at the upper end. Should there be a considerable fall of snow, at this season, it will be well to remove it from the sashes, lest the plants become too warm, and start into an unhealthy growth. It is safe at this time to be prepared for sudden cold after a succession of mild days. In such cases, shutters, straw mats, marsh hay, or other litter, or even old carpets, should be in readiness to place over the sashes and protect the plants from sudden freezing.

Gates with Wooden Hinges.

A subscriber in Tasmania sends us sketches and following description of a handy gate with wooden hinges: "Bore a large auger hole through the gate-post, both above and below; make the sockets of tough wood dressed to drive through the auger hole, and put in a pin on the other side. The sockets for the gate are, of course, bored, and the ends of the gate head rounded to fit, with a shoulder. This plan is superior to a socket placed in the ground which usually holds the water and soon rots."—The arrangement of the parts described is shown in figure 1; the socket seen from above is given in figure 2." The same correspondent says:—"I have constructed a gate, full sized gateway, say 10 feet, intended to be merely temporary, but afterwards properly hung, and still as good as ever, four years' old and continually in use. It was made of pieces of an old roof, rafters and battens, and did not take more than half an hour to put it together. The rafters, for heads, here checked out the width and thickness of the battens with a saw, the checkers knocked out with a chisel, the battens inserted in their proper places, and a batten nailed over the head. The nails were clenched, and the whole gate simply braced. The size of rafters was 2 by 3, and the battens 1 by 3 inches." A single head is shown in figure 3. Our subscribers in Tasmania and Australia are quite numerous and we hope others will give our readers the benefit of their experience.

Fig. 1.—GATE POST WITH WOODEN HINGES.

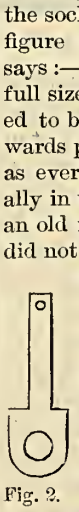
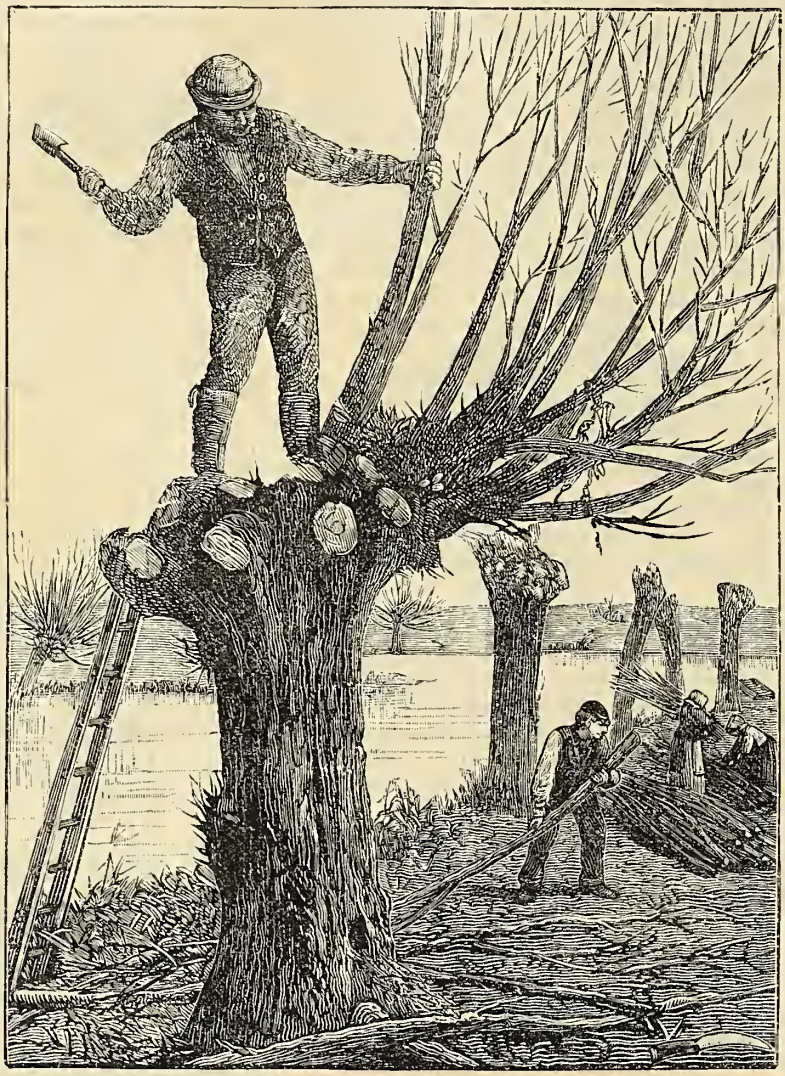


Fig. 2.

Fig. 3.

Some Uses of Willows.

An American, travelling in England, is struck by the frequent occurrence in the landscape, of the Pollard Willows, the low rounded heads of which, in some localities mark the water courses for long distances. Willows thus treated; for the Pollard is not, as sometimes supposed, a distinct kind of willow, may be occasionally seen in some of our older States, but less frequently than formerly. The White Willow excitement of some twenty years ago, was unfortunate, as many farmers, finding that the tree did not bear out the extravagant claims of speculators, became so disgusted with it that they overlooked its real merits. While the White Willow hedge will not be, as claimed, "the universal fence," the White, and other willows may be made most useful especially to those who live in prairie regions. The question frequently comes from the West and elsewhere, as to the best method of preventing streams from encroaching upon their banks. Lining the banks with a row of willows is a very ancient practice, and probably there is no better method. Their roots, especially in wet ground, form dense masses of fine fibres well suited to retain the soil in place. The ease with which such a barrier is established is greatly in its favor. Cuttings of almost any size readily take root; these may be a foot or two long, and as thick as one's finger, or they may be large enough for fence posts, according to the readiness with which they can be procured. While the roots are useful in preserving the bank, the tops may be turned to good account to afford fuel or poles for various purposes upon the farm. Another use for willows is as a wind-break, to shelter the house and farm buildings, as well as to protect orchards and young forest trees from the prevailing winds. When planted for this purpose, as well as along the streams, the tops are made most useful by occasional pollarding. In growing willows for basket-making, the stem reaches barely above the ground, and the shoots are cut every year. With pollards, the trunks grow 6 to 8 feet high, and the stems are cut once in three or five years, according to the use to be made of them. This treatment of the willow very likely had its origin in the fact that the wood of an old trunk is poor and of little value, while that of a young branch is vastly superior, and will serve many useful purposes. The pollard is started, either by setting a willow stake of the hight desired for the trunk, or by planting small cuttings, and when the trees from these have grown tall enough, to cut them square off. The nearer they are planted the straighter the shoots will grow. The engraving shows the manner of cutting; every branch is removed close to the trunk. The following spring an abundant growth will start from dormant or "adventitious" buds. Some of the trunks of very old pollard willows are picturesque objects. They are often decayed in the center, and it is not rare for seeds of other plants, carried there by birds, to germinate and grow in the decayed wood. Sometimes roots have started from the willow branches themselves, and made their way down through the hollow trunk to the ground. The shoots of pollards make fairly durable rails, when nailed to posts; and they answer as sides for ladders, and a great number of other uses on the farm. The kind of willow most readily obtained in this country is the White Willow, and its variety the Golden, or Yellow Willow. The Sallow, or Goat Willow (*Salix Capræa*), is kept in some nurseries and is preferable, on account of the greater hardiness of its wood, for poles or for fuel. In England other trees are pollarded, especially the Ash and the Wych Elm, in order to raise poles, while in Italy the Mulberry is so treated for the convenience in gathering its leaves for feeding silk worms, while the trunks are used as supports to which to train grape vines.



POLLARDING, OR CUTTING THE YOUNG GROWTH FROM OLD WILLOWS.

Cut-Worms and other Insects in Georgia.

BY DR. A. OEMLER, WILMINGTON ISLAND, GA.

Very many gardeners and farmers, without any knowledge of the habits and metamorphoses of insects, were congratulating themselves that, following our last very severe winter, they would suffer less than usual in the spring and summer from predatory insects. Contrary to such expectations, however, we suffered more severely than I can remember in an experience of twenty-six years, the insects having been retained in their dormant, hybernating state during the entire winter by the severe cold, until when they came forth at the opening of spring they found favorable weather and a plentiful supply of food for their sustenance.

The common Cricket was early, very injurious to strawberry plants and fruit, and, in one field especially, they were troublesome to my young cabbage plants. The Mole Cricket (*Gryllotalpa*), cut off the seed leaves of young watermelon plants so persistently that I was compelled to plant ten acres of my crop over five times. In August the Grass-worm of the South (*Laphygma frugiperda*), came on some farms in such countless numbers as not only to devour every blade of grass, but to destroy large plantings of cabbage, one man losing every plant from eight pounds of seed. Still later, Grasshoppers appeared so abundantly that, between the two and the voracious Cut-worm, our winter crop of cabbage for the northern markets was materially shortened, notwithstanding many truck farmers secured a partial supply of plants from the North. I have been located on the extreme end of this island for the past sixteen years, and during that time I have never, to my recollection, noticed the presence of a Cut-worm without stirring him up and preventing the advent of his probable progeny. On a field upon which a thick growth of Cow Peas had been plowed under about a month previous, I undertook, early in November, to plant out cabbages, when I found Cut-worms had taken possession in such numbers that I was compelled to desist until I could get rid of them. In an area of twenty-two square yards, I caught, one morning, under ten turnip leaves placed on two adjacent rows, 294 Cut-worms, and 58 of all sizes under one single leaf about a foot long. My son caught 15 at the root of a small cabbage plant. Prof. Riley having requested some to be forwarded to Washington, I send out a negro lad some days afterward, and he brought me from the same field over 250, which proved to be nearly every one the larvæ of *Agrotis suffusa*. Finding them too numerous to be hunted, I placed turnip leaves poisoned with Paris Green upon the field, and left them quietly to make way with themselves, which they did with such perfect success that a week afterwards I had a great stand of plants. They have been very abundant everywhere in this section. In my experience with Cut-worms I have found prevention better than cure, I seek either to deter the moths from laying the eggs of the future worm, where I expect

to put out valuable plants, by having the land entirely bare of vegetation at the laying season, or, if already in the soil, I remove them before putting out the plants. As a bare fallow is injurious to fertility in this climate, I prefer to mulch the ground thickly with pine straw or dry marsh sedge, which is burned off in preference to plowing it under on my light sandy soil. Such insects as Crickets harboring under the mulch will be destroyed by the heat. If in the rotation a clean crop, which is not subject in the fall to Cut-worms, precedes the one to be put out, little fear of injury need be entertained. Two years ago, intending to put out about an acre of Extra Early Dwarf Erfurt Cauliflower plants, the seed of which sells in New York at $9 per ounce, I mulched the land early in the fall with marsh sedge. As with the cabbage field above mentioned, a very heavy crop of Cow Peas had been plowed under. I lost only about a dozen plants, and these near the borders. Four years ago, being anxious to secure a good stand of Watermelons on about one-quarter acre, from which I expected to save some choice seed, I placed cabbage leaves and bunches of grass on every other row, as soon as the hills were made, and hunted the worm every morning. Before the seed was up I captured 1,538 Cut-worms and only a single one afterwards. There were worms enough to average eleven to the hill, and my melons would have stood a poor chance, had they remained, as a single worm could have cleaned off several hills.

The Globe Sunflower.

Not long ago there appeared in the European catalogues *Helianthus globosus fistulosus*, and it is now offered by our seedsmen. Two names are all that any plant ought to have, and the first two of these may be translated into "Globe Sunflower," which is short and descriptive. What *fistulosus* (hollow) applies to we are not quite sure, but probably to the quilled form of the florets. At all events, the engraving shows it to be a sunflower that is

THE GLOBE SUNFLOWER.

trying to look as much unlike a sunflower as possible. We are not told anything about its origin, but as it is an annual it is likely to be a variety of the common sunflower, *Helianthus annuus*, in which the disk is filled with ray flowers, and the very convex receptacle gives the head a form approaching the globular. It is said to grow about three feet high, and to bloom profusely. Where an abundance of yellow is desired to mix with and warm up other and more sombre colors, this will no doubt afford aready means of providing it.

Drummond's Phlox and Its Varieties.

Most of our choice florists' flowers have come to us through many generations of cultivators, and at the hands of each have been improved, and more and more removed from the original form. We can now hardly conceive that the finest Carnations started from a not very attractive single Pink, or that our choice Pansies, with their wonderful richness and variety of color and great size, could have been derived from the poor little *Viola tricolor*. It has required the care of gardeners through several centuries to bring some of our flowers to their present perfection, but in the Drummond's Phlox the improvement is comparatively recent. The change from the original form, with its rose-colored flowers, to a great variety with colors and markings so different as to warrant giving them distinctive names has been begun, and has gone on within the memory of many now living. No contrast among flowers can be greater than that between the original Drummond's Phlox and some of its recent varieties. Those who, like the writer, have seen this plant on its native soil in Texas, know that in early spring it covers broad stretches of prairie with a pleasing uniform rose color. The seeds were sent to England in 1835, and for a number of years they produced flowers of that color only. If we examine the catalogues of the present day, we find that the seeds of some 40 named varieties are offered, and hardly a year passes without the introduction of one or more well marked new kinds. We now have in this one plant a wide range of colors, from pure white to dark crimson, or to deep and brilliant scarlet, with all intermediate tints; there are also several shades of yellow, but the nearest approach to blue, is a slate-colored variety. Not only are there many brilliant and pleasing self-colors, but the number with variegated flowers is now large. There are dark flowers with light "eyes" and centers, and light ones with dark centers. Of late, varieties have appeared with centers so large that the body color is reduced to the dimensions of a mere border around the outer edge. The engraving gives, so far as may be done in black and white, the contrasts presented by some of the newer varieties. The flower at the left-hand, with the large white center, has a border of very deep maroon, while that at the right-hand has a border of lively carmine. The lightest flower low down and near the center is pure white with a yellow eye, from which purple spots shade off into the white. Of course, these many varieties could not have been produced had not this plant a marked tendency to vary, or "break," as the florists term it. There is a great difference in plants in this respect; some have been in cultivation for centuries and still remain the same. Others, after a several years of cultivation will depart somewhat from the original, and by sowing seed from these, a wider variation may be secured, and thus by a series of selections, without any hybridizing or crossing, numerous varieties are secured and made permanent by careful cultivation. As to Drummond s Phlox, or *Phlox Drummondii*,

A CLUSTER OF NEW VARIETIES OF DRUMMOND'S PHLOX.

the varieties generally come true from seed, and as the plant remains in bloom a remarkably long time for an annual, it is possible, by the use of the different varieties of this one species alone, to produce brilliant bedding effects. Indeed, there is no other way by which those who do not care to expend much upon flowers, can make such a brilliant show as by planting separate beds upon the lawn with varieties of Drummond's Phlox.

The Albert Workingmen's Garden.

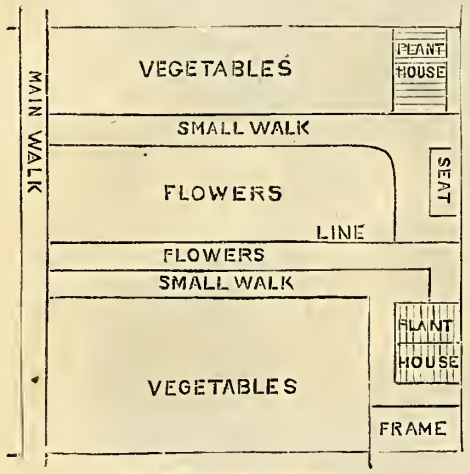
BY ELIAS A. LONG, BUFFALO, N. Y.

During a recent visit to Europe, I had an opportunity for making a hasty call at the Garden bearing the above name, in Glasgow, Scotland. The Garden is owned by a Mr. Dickson, a large manufacturer who employs many men. About five acres of ordinary good land, lying not far from his works, are embraced in the Garden, and this area is divided into nearly 200 plats with walks, which make all parts accessible. These plats differ in size, but average about four square rods each. These are let out to the different workmen employed in Mr. Dickson's establishment who devote them to the cultivation of various vegetables and flowers.

All the work is done after the regular day's work is over, and although the Garden was almost wholly deserted when I visited it near mid-day, it was said that the place presents an extremely busy and cheerful scene, during summer evenings, when the workmen have come there with their families, to work and enjoy the pleasures of the Garden. Many of the plats have pleasant seats or Climber-

covered arbors at the rear end. I was surprised at the attention the cultivation of flowers received, and I think that fully one-fourth of the space was given to these. Perhaps two-thirds of the entire number of plats have either small artificially heated plant houses, or else frames, for bringing along plants, and for growing specimen pot plants. The accompanying sketch shows how some of these plats were laid out by the occupants. It is seen that a path leads from the main walk back through each plat, generally extending to the conservatory, seat, or frames.

The prices at which these plats may be had by the workmen average about two dollars in our money per plat per annum. By this it will be seen that Mr. Dickson derives quite an income directly from the arrangement,



PLAN OF THE GARDENS.

in addition to the greatly increased value of the services of his men, who are thus employed and refreshed by useful pastime. The gain must be very large, to have several hundred workmen thus utilizing their spare time, instead of worse than wasting it as well as their money in the drinking and gaming places. Judging from the excellent condition of everything, the quantity of produce taken from the five acres every year must in the aggregate be something marvellous.

One thing that tends to perfection in the gardening, is the spirit of friendly rivalry that exists, largely as a result of the offering by Mr. Dickson of a series of prizes every year for the first, second, and third best showings of different kinds of fruits, flowers, and vegetables. While scores of beautiful flower borders, all over the Garden, testify to the love and ability of these workmen and their families, for rearing flowers, some of the prize borders were as fine as anything in the same line to be met with anywhere. The establishment of such Workingmen's Gardens throughout America, in conjunction with large factories and workshops, would surely lead to much good to all parties interested.

Remedy for the Maggot of the Cabbage Fly.—Mr. H. M. Cowles, Hartford Co., Ct., writes: "I see by an article in the Dec. number of the *American Agriculturist* that Bisulphide of Carbon is recommended for the Cabbage Fly. How is it applied?"—The use of Bisulphide of Carbon is not only to be recommended for the cabbage-maggot, but also for the squash-borer, and other subterranean insects. It would serve admirably to destroy ants when we can find their hills. To apply the liquid, we have only to make a small hole, by use of a cane or other small rod, close beside the plant to a depth of two or three inches, then pour into the hole a half teaspoonful of the fluid, and quickly cover the same by filling the hole with earth, and pressing it down with the foot. The same operation in the middle of an ant-hill will quickly destroy the ants if they are in the galleries of the hill. All should remember that Bisulphide of Carbon and also its vapor, are very inflammable, and should always be used with great care.

Trees Injured by Vines.

Vines, which climb by tendrils, like the Virgnia Creeper, or by rootlets, like the Trumpet Creeper, may be allowed to run upon trees without materially injuring them. Those which climb by twining should never be allowed upon trees, as they may check the growth and do permanent injury. One of the most destructive vines of this kind is the Climbing Bitter-sweet, or Wax-work (*Celastrus scandens*), a beautiful climber, which is often seen holding forest trees in its fatal embrace. Prof. W. A. Buckhout, of the State College, Centre Co., Pa., sends us the following account of the injury inflicted upon an ornamental tree through the agency of this vine. He writes:—"On our College grounds we have a fine Norway spruce, from which about ten feet of top have been cut off by our Climbing Bitter-sweet. This vine having secured a foothold directly beneath the tree, and protected by its wide-spreading branches, grew half concealed among them, until it reached two-thirds of the distance to the top. Here it put all its strength into one long naked stem which quickly threw two or three close coils about the tree. Then springing back among the branches it twisted about there a little only to dart in at the very top, round which it ran in a close spiral, ending in a cluster of leafy branches thrown out in every direction, and luxuriating there after the manner of twiners generally when they have reached the top of their support. The spruce thus bore a light green crown—not its own. With advancing growth the coils of the Bitter-sweet began to tighten about the tree. They did not break or give, but gradually became embedded, first in the bark, then in the wood, the wood bulging most over the upper edge of the track of the vine, and thickening sensibly there, while just below the track the diameter remained about the same. A copious exudation of resin showed plainly the spiral track of the ligature. When the vine was sunken about an inch at one point, the top of the tree became top-heavy, and in a gale of wind it was broken off and fell to the ground. The cut shows the section of the base of the broken top. Bear in mind that this fractured end was cut from the part which broke away from the tree, and not from the other, although it does present the singular anomaly of a greater diameter above than at the point of breaking. But this is only in accordance with the laws of growth which produce a more marked enlargement above a constriction than below it.

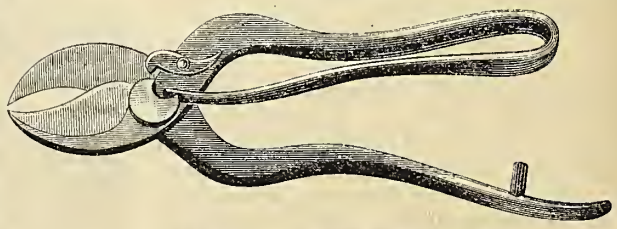
INJURY BY CLIMBER.

The injury seemed irreparable, but the strongest limb just below the fracture was bent up as near to the perpendicular as it would bear without breaking, fastened securely to a pole which was lashed to the stem below; and now, after four years' growth, there is a very good leader, and the tree has so nearly recovered itself, that in a year or two more the old injury will not be noticeable.

It is hardly necessary to say that we lost no time in cutting the Celastrus down to the ground, but as it could not be readily reached on account of the thick branches at the base of the spruce, the roots were allowed to remain, and every year it sends up again its exploring branches, and is ready to repeat the operation again if given the opportunity. Twining vines should never be allowed to run upon growing trees, especially upon such as by reason of their kind or position are particularly valuable. The growth of years may be snapped off in a moment, and a tree so disfigured that it will be difficult to restore it.

"Perfection" Pruning Shears.

The fact that year after year new patterns of pruning shears appear at home and abroad, would indicate that the perfect implement had not yet been invented. To one who needs to use such shears only occasionally and for but a few minutes at a time, it makes but little difference what the pattern, if they are only sharp and make a clean cut. But if one has to work the whole day, and perhaps several days, he finds that the comfort of working depends largely upon what may seem trifles in the construction of the shears. Aside from good cutting blades, the spring, while it opens them promptly, should not be so strong as to require an unnecessary amount of force to close them. The handles should be large enough to fill the hand comfortably, and be without any edges or sharp angles. The catch to keep the blades closed when not in use is generally near the ends of the handles, and is very often much in the way, and sometimes contrived with so little forethought that it may pinch or wound the hand if the operator is not on his guard. We have inspected a recently imported French implement that appears to have avoided the usual faults. As will be seen by the engraving, the structure is exceedingly simple; the end of one handle is prolonged and turned up to form the spring, thus doing away with a separate spring. The handles are broad and fit the hand well, while the usually troublesome catch, very strong and simple, is up near the pivot where it can do no harm. It would seem hardly possible to go any further in the direction of simplicity.



A NEW STYLE OF PRUNING SHEARS.

The Profit from Thinning Peaches.

BY PROF. W. J. BEAL, MICHIGAN AGRICULTURAL COLLEGE.

The Hon. A. S. Dyckman, of South Haven, Mich., is a noted grower of fine peaches. One of the leading points in the management of his orchard is that of liberally thinning the young fruit. In 1877 from one Early Crawford tree, set 17 years, he thinned at one time 8,000 peaches, and at another 2,000, making 10,000 in all, from a tree which finally yielded about 15 baskets of choice fruit. One man would spend a day in thinning four to six trees. The cost of thinning peaches does not exceed five cents a basket for those ripened. He estimates the cost of thinning his peach crop in 1877 at $500. Peaches were plenty that year, but he received extra prices for fine, large fruit, which had little competition. He has practised thinning for several years, and is assured that the excellent reputation which his fruit enjoys is due to this. In pruning, he removes one-third of the small limbs. He then removes nine-tenths of the young peaches, leaving no two nearer than six inches of each other. He has fewer specimens to handle, but about as many bushels as though he had not thinned. We have similar testimony from J. J. Thomas, E. Moody, President Wilder, and others, as to the utility of thinning apples, pears, etc., as well as peaches. Mr. Geo. Parmelee, of Grand Traverse County, says, that in one year peaches on a thinned tree brought $2.50 per basket, while the fruit from a neighboring tree of the same variety, but unthinned, brought him only $1.25 per basket.

It pays to thin fruit when young. It costs less than one would suppose until he tries it. No one who has fairly tried the experiment, and seen the result, will abandon the practice.

The "American Wonder" Pea.

An account of the origin of the "American Wonder" Pea was given in January, last year, and we have from time to time presented our own experience with it in two years' cultivation. We now notice this variety to show how extended trials abroad, as well as at home, have sustained our opinion as to its value. Heretofore, all of our good peas have been of English origin, and it is a matter of no little gratification to us, and of considerable astonishment to Europeans, to find an American pea walk right by their old favorites, and take its place at the head. Messrs. Sutton & Sons, the great seed-growers of Reading, Eng., after a thorough trial, give this pea the highest praise, and in their catalogue for this spring have a half-page engraving showing the appearance of their field of this variety. An equally high estimate is placed upon it by Ernest Benary, the noted seed-grower of Prussia. It is now offered by seedsmen generally. The accompanying engraving is an exact representation of a portion of a row, and from our experience, we are sure that the artist has not used his imagination in depicting its wonderfully prolific character. We look upon the production of this pea as one of the most important steps made, of late, in its department of horticulture. Green peas are generally esteemed as the most delicious of vegetables; yet every one who has a garden is aware that their production requires a deal of trouble. The work of getting brush and of sticking peas, or of supplying any substitute in the shape of a wire or other trellis, is a rather high price to pay for one or two pickings of peas. The introduction of a good dwarf variety greatly simplifies pea culture. We have had a number of dwarf peas heretofore; these were productive, but not good, or good, but not prolific. In the "American Wonder" we have the very highest excellence combined with abundant yield. On good soil, this variety may be sown in rows 18 inches apart.

THE "AMERICAN WONDER" PEA.

It is early, being ready for the table in 30 to 35 days after sowing. By putting in successive sowings, at intervals of a week or less, a succession can be kept up until the weather becomes too hot for successful culture. Few of our tall peas, save, perhaps, the "Champion of England," in favorable seasons, give more than one full picking and a following poor one, and we cannot expect more from this dwarf. In market gardens it is regarded as a good feature if a variety yield its whole crop at one picking. We do not know that the "American Wonder" has been grown as a market pea, but we have no doubt, considering how near the rows may be, that it will be found profitable. Of all choice vegetables, peas are less frequently found on the farmer's table than any other kind. The work of sticking tall peas comes when the time cannot be afforded, and if the family have green peas more than once or twice they are fortunate. We especially welcome this new variety for the reason that it will allow the farmer, or whoever has the land, to have green peas, of the best quality in abundance, several times a week, as long as the season lasts. Those who do not feel that they can purchase seed for an abundance of peas this season, can buy enough to raise the seed for a full feast of peas next year.

Raising a Crop of Onions.

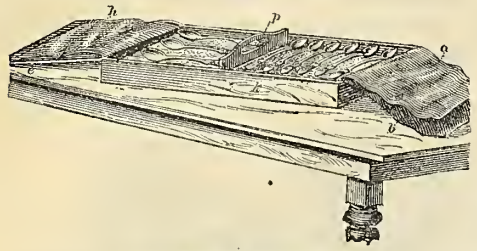
The price of onions is exceedingly variable, and in each season of high prices many have their attention turned to their cultivation; consequently we have many questions on the subject. The onion crop is not one that can be profitably grown one year and dropped the next. It is usually the case that those who continue the cultivation year after year, are those who in the long run make it profitable. It is of little use to try to raise onions, except on highly manured land, and without being able to give the labor required in weeding just at the needed time. Land that has been for two or more years in corn or potatoes, will answer for the crop. It is claimed by experienced growers that newly-turned sod will not raise good onions. The land is preferably manured in the fall, using 20 to 30 loads of coarse stable manure to the acre. Or the land is plowed in the fall, and a ton of fish guano to the acre is harrowed in. The land is again plowed shallow in spring, and 300 lbs. to the acre of Peruvian guano, or its equivalent in other good fertilizer, harrowed in. If the ground has not been manured in the fall, then fine pig-pen manure or fine stable manure may be used, plowing in very early, using the guano or other fertilizer afterwards. The harrowing should be very thorough, and if the surface is not smooth, use rakes to finish. The sowing should be done as early in spring as the soil is in good condition. The ground is marked out by a marker in lines 14 inches apart, and the seed sown by one of the several seed sowers; the machine should be set to drop about three seeds to the inch, and they need to be covered about half an inch. All experienced onion growers are very particular about their seeds, which should be new and of home growth. The variety will depend upon the demands of the market, but the beginner will do best with one of the Early Red varieties. The cultivation of the crop may be greatly aided by the use of one of the hand weeders or cultivators, of which there are several good ones advertised. If the rows are straight and the sowing regular, a hand cultivator may be run very close to the plants, leaving but few weeds to be taken out of the rows by hand. Usually three or four weedings are needed during the season. Three bushels of salt to the acre, applied when the plants are about four inches high, is beneficial, and at the second weeding it is well to give a good dressing of wood ashes. We would not advise those who have never raised onions to go largely into their cultivation at first, as they require more attention than many can give, and unless the weeds are kept in subjection the onions will suffer. Some varieties mature much earlier than others; the harvesting is commenced whenever the majority of the tops fall over. Many growers prefer to sell the crop directly from the field, while others prefer to hold on in the hope of better prices. If they are kept they should be well cured.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Spoon-Case.

Silverware is an article of table use that is not only expensive, but is easily injured by scratching, tarnishing, etc., and the spoons in particular should receive better care at the hands of the house-keeper than is generally given them. This is easily done by the use of a spoon-case, or holder, similar to the one



A CONVENIENT SPOON-CASE.

shown in the engraving. It is simply a box, *k*, 2½ inches high, and of a length and width sufficient to place six teaspoons crosswise at one end, and three tablespoons lengthwise at the opposite end. The bottom may be filled half an inch in depth with wheat bran or sawdust, over which is fitted a piece of flannel, and upon this the spoons may be firmly pressed, to make a permanent indentation in the bran and cloth. Pieces of flannel, *a*, *b*, and *h*, are secured with glue or tacks to each end of the case. One of these pieces is spread over the spoons as soon as a course is laid; another is then added and a second piece of flannel placed over it. A hinged cover, *c*, may be attached to either end. A handle, *p*, is secured at the center. This is a very simple arrangement, and by the use of different colored flannels, and by the painting or papering of the box, a very neat and attractive receptacle is obtained for an expensive portion of table furniture. L. D. S.

Over-work Among Women.

In about nine cases out of every ten, the woman who is in poor health attributes her sufferings to over-work. Many times this is a valid excuse, but frequently it is not the real cause of the ill-health. Lookers-on cannot always understand the situation, and the comparisons made between one woman's work and another's are often incorrectly drawn. Molly sometimes suffers from over-work, but she avers that no part of the work to be done for her household is really beyond her strength. She says that as regular house maid she could do all of the so-called house-work and the plain sewing which she now does, and maintain her health. But to do these things well would leave no time for the "nothings," and every mother whose heart is in that work knows that it takes a good deal of time. I believe, and here is one more chance to bear witness to this truth, that the mother-work should have the first chance. A woman whose ideals are low can sometimes carry on all of these departments successfully (in her own opinion), and in that case her health is not likely to suffer from too much work. It is the worry, the sense of incompleteness or of falling short in what is required of one, more than all the fatigue of her work, that wears Molly out.

It is well to know how to do every thing in the best way possible, but when a woman finds that she cannot do everything that it seems to be her duty to do in the best manner possible, she had better stop and consider what are the most essential things to be done, and study the easiest ways of getting along without positive neglect. Wholesome food the family must have, but most of the fancy cooking is done in vain as respects health and strength. This same fancy cooking (which includes cake and pie—these being quite unnecessary articles of diet, doing more harm than good in most cases) is one of the chief causes of ill-health among women. Nearly all of these invalids are more or less dyspeptic. I have watched this a good deal among my neighbors in different places. Few of them give the right name to their disease, and I think the doctors are sometimes careful not to tell them the whole truth, but those who make any permanent improvement under medical treatment usually make some change in their habits of diet. One woman told me, during an hour's visit, these two facts, which did not seem to have any connection in her own mind: 1. "I used to be a great sufferer from sick headache, but I seldom have it in late years." 2. "No, I rarely eat a crumb of cake now, no matter how much I make; I haven't cared for it a few years back, though I once was very fond of nice cake." Another, in praising her doctor's success in the treatment of her nerves, after detailing the medicines and the rest and rides prescribed, remarked incidentally that the doctor told her to eat rather lightly of plain, nourishing food, and to give up her tea and coffee if she could. Many years ago I heard a physician of fine education and large experience ridiculing the idea that prevailed among women that their sickness came generally from over-work. "They over-work their jaws," said he, "munching confectionary, and eating all sorts of unwholesome food, and they often eat too much anyhow for persons who exercise so little." At the time I thought this criticism too severe, but I have often since seen cases to whom it applied.

Another way in which women are over-worked by their own fault—a sin of ignorance frequently—is in the use of foolish clothing. We are all more or less in bondage here, for woman's dress is radically wrong. It is a weight and a hindrance everywhere. Clothing devised to suit the needs of the human body would be much more easily made and taken care of, and it would give a woman freer movement, greater ease and comfort about her work and play, and would be an aid to good health rather than, as now, a drag upon her strength. But a genuine reform cannot be made by any one woman, for it awaits the development of public opinion. But cannot we all lend a hand here, and say on all proper occasions, that woman's dress is absurd, and inconvenient, and unhealthful, and that we wish for something better? Most of us can put less work and care upon our trimmings, and none of us need wear a trained skirt, or one that touches the floor. We may all wear loose and warm clothing, and bear the weight upon our shoulders rather than over the hips. Various female weaknesses are supposed to be caused by active labor, by much standing upon the feet, by much climbing of stairs in the pursuit of one's daily industry. They may be aggravated by these causes after they have been once induced, but I have serious doubts whether these weaknesses are often really attributable to the causes above named. Corsets and heavy skirts are the real offenders. It is usually the case that the same work might have been done—the standing and the climbing—had the muscles of the body, both external and internal, been left free and unweighted by the clothing. How many feathers' weight are added to her burden of toil and worry by a woman's long skirts, as she goes about her work in-doors and out, up-stairs and down, around the kitchen fire, or cleaning the floors in an unsuitable dress?

It is not the hardness of the work, or the difficulty of the tasks taken in detail, that tires out the women as a general thing, if we except the family washings, which usually require a good deal of strength. But these tasks crowd upon each other, and become complicated and worrisome when the care of children interferes with them. These are genuine cases of over-work, where the labor is too hard and too steady for the stength of the worker; but care and worry are harder to bear than physical toil, and social burdens do their part to over-tax the vital powers. F. R.

Making the Table Attractive.

In matters of the table, the question how far the eye shall be gratified as well as the palate, must be decided by the circumstances of each house-keeper. We cannot expect the

A LEAF OF THE FERN-LEAVED PARSLEY.

farmer's wife who, with several children to care for, has to provide the three meals a day for her husband and several hired men, to look much after the ornamentation of the table. If she can provide a fairly clean table-cloth, and tolerably bright knives, forks, and spoons, she does well. Indeed, these are the very foundation of all table adornment, for where these are wanting all ornamentation

of dishes is out of place. There is a great deal in the way of doing little things, and one house-keeper will have her table neat and attractive, while that of another, with exactly the same means, will be the reverse. For example, a handful of radishes, thrown higledy-pigledy upon a plate, all heads and points, looks careless. The very same radishes, placed in a tumbler or other glass, with the neatly cut tops all uppermost, make a pleasing ornament for the table. If cold meat is to be served for supper or tea, it makes a wonderful difference whether the remains of the leg of mutton is put on as they were left at dinner, and perhaps in the same dish; or a few thin slices cut off, and neatly laid upon a plate. But these things, it may be said, come under the head of order and neatness, and have nothing to do with garnishing. With many house-keepers order and neatness are all that they can hope to secure, and fortunate is the hard-worked farmer's wife, if she can always welcome her husband after his day's work, to a table adorned by these. There are, however, many among our readers who can go a step in the direction of ornamentation of the table. If there are strawberries for tea—as there should be in every farm house in the season, the farmer's wife may well spend a few minutes in placing strawberry leaves around the edge of the dish, no matter how common the ware. If there are grapes for dessert, a few leaves and tendrils among the clusters give an easily added beauty. A house-keeper who cares to make her table attractive will find it a great help to have a few roots of Parsley in the garden in summer, or in a box of earth in the kitchen window in winter. It is a small matter, to be sure, but the brightness that a few green leaves, contrasted with the white china and white table-cloth, bring to the table, is worth just the little trouble required to secure it. A few leaves of Parsley around any dish of cold meats converts it into an object of beauty. We mention Parsley, because it is the green the most generally used and the most easily provided. The seeds take a long while to come up, but the plants, when established, grow freely in any garden soil. Of late, a variety has been introduced called "Fern-leaved," of which a single leaf is shown in the engraving. This is as easily grown as the common Parsley, but it is so beautifully cut and frilled and fringed, that it is handsome enough to serve as the green to the finest bouquet. A box of it in the kitchen forms a cheerful ornament, and its leaves will be at hand when wanted. Of course Parsley is not the only material that may be used for garnishing dishes. A few slices of beet and carrot, cut crosswise, will set off a dish of sliced corned beef; sliced hard-boiled eggs may be used to ornament a salad, etc.

Household Notes and Queries.

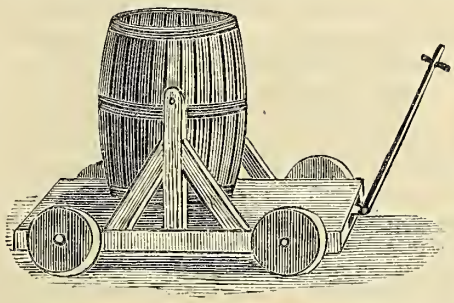
Home-Made Graham Flour.—Observing the complaint of our "Minnesota Housekeeper," of the difficulty in procuring satisfactory Graham flour, "J. H. K.," Belfry, Pa., suggests as a remedy that she grind it herself. "A good coffee mill may be bought for from $3 to $5, and the grinding of a peck of wheat will be a pleasant exercise. The bran may be sifted out if desired, but if ground fine it is better when not sifted. We formerly had trouble to get good Graham, but the coffee mill solved the difficulty. We now have the meal fresh at all times, and its purity is assured. It should never be bought or ground in large quantities, as it soon becomes stale and has a bad flavor."

Bed-Bugs in Australia.—These insects are apparently found wherever civilized man makes his home. They are well fitted to make long journeys, as they have been known to live more than 10 years without feeding. "C. S." writes from Wellington, South Australia, that on two occasions he has moved into houses badly infested with bugs, and in both cases cleaned them out by the use of a strong hot solution of soft soap. For reaching the bugs behind the skirting a garden watering can was used.—We would suggest as adding to the efficacy of the application, to stir a quantity of benzine or kerosene with the soap before dissolving it.

Keeping Eggs.—"Mrs. J. H.," Humboldt, Kans., writes that she is very successful in keeping eggs in dry salt. A layer of salt is placed in the bottom of a stone jar, and the eggs are laid in this, the small end down; the spaces are to be filled with salt, and the eggs well covered, then another layer is put in, and so on until the jar is filled. Place the jar in a dry place, and our correspondent says the eggs will keep a year. This is one of the oldest methods of preserving eggs, but it may be new to some house-keepers.

The Disposal of House Slops.

"Improvement" sends from Antigonishe, Nova Scotia, the following, accompanied by a drawing: "You frequently urge, and rightly so, that the premises around the back door of a farm or country house should be kept as clean and neat as those at the front door. To accomplish this is the difficulty. Where no



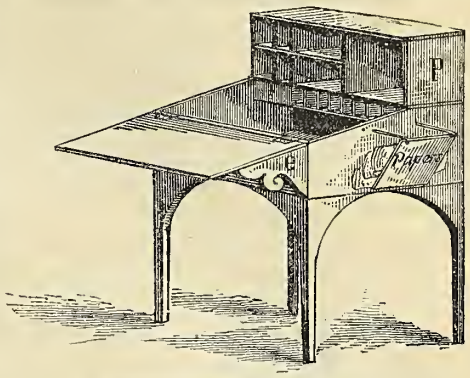
A SLOP BARREL.

provision is made by means of a sink and proper drainage to carry off the waste water of a house, it will always be thrown by servants and others in the most 'convenient' spot, and this is usually about the back door. We can hardly expect girls to carry waste slops any distance on a cold day, particularly to empty them on a manure heap. My plan is to provide a good sized cask mounted on wheels in summer, and on runners in winter, which can be drawn up for use not far from the back door. Into this the slops can be thrown, and when necessary the whole can be drawn to the proper spot and easily emptied, to be returned to its place for future use. The cask should be hung by means of pivots in such a manner that it can be easily upset, and when released will return to a perpendicular position. Placing the pivots slightly above the center of the cask on each side will do this. I append a rough drawing to explain my meaning. It may be used in a garden to carry water about in dry seasons."

A Home-Made Desk.

L. D. SNOOK, YATES COUNTY, N. Y.

Nearly all persons have papers, letters, and other documents, important and otherwise, which they desire to keep and preserve in good condition. They also need a place in



A CONVENIENT WRITING DESK.

some part of the house where letters can be written and other matters jotted down. For this purpose nothing is equal to a good desk, and to be useful it need not be expensive. Any person at all skillful with tools can construct, in two day's time, a desk similar to the one shown in the engraving, and it will answer the purpose quite as well as a desk costing from 10 to 15 dollars. It is shown so plainly that a short description will answer. The lid is 2 feet 8 inches long and 16 inches wide; when open it rests upon supports, *e*, that are hinged to the front of the desk, and fall inward out of the way when not in use. The width of the desk is 28 in., and 2 feet 8 in. long. The upper portion, at *p*, may be firmly attached to the body of the desk or left loose as desired; it is one foot high, ten inches wide, with large and small shelves and pigeon-holes. A row of small pigeon-holes is made in the desk, and should be four inches wide, to readily admit an envelope. It is also best to have one or two small drawers, with keys fitted to them, for the better security of important documents. Papers, magazines, and other printed matter may be placed in the open space in the center. A paper holder is also attached to the side, in which place, papers you have unfinished and other reading matter may be kept. The legs of the desk may be rounded or left square. The lid when open is, of course, intended to be used as a place for writing.

Cottage Cheese.—Wherever a cow or cows are kept, the cream is regarded as the important part of the milk, while the skim milk goes to the pigs or the poultry. Of course it is thus utilized and ultimately comes around as food, but it may be better to make a more direct use of it. The skim milk contains a valuable portion of that most nutritious food; in taking the cream, only a part of the nutriment is removed. The skim-milk is allowed to become slightly sour or "clabbered." The pan is then set upon a cool part of the stove to warm gently, or upon the top of a kettle of boiling water. It should get no warmer than the heat of new milk, when the whey will appear clear and separate from the curd. When this separation takes place pour the whole into a bag of thin material, and hang it up to drain. When it ceases to drip, turn the curd from the bag and mix with salt and a little sweet cream.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

One of my young friends writes: "I saw it stated that at the observatory on top of the White Mountains the wind was blowing at the rate of 50 miles an hour. Did they guess at it, or have they some way of measuring the wind? By the way can you not tell us something about the wind and why it blows?"—Perhaps my correspondent did not think of it, but his question is a timely one, as the "Talk" comes in the most blustering of all months—March, which is quite sure to furnish abundant illustrations of the wind and its doings. To tell you something about wind, we must first ask

What is Wind?

The books give a brief but sufficient answer when they say, it is "air in motion." You will then be quite sure to ask: "What sets the air in motion?"

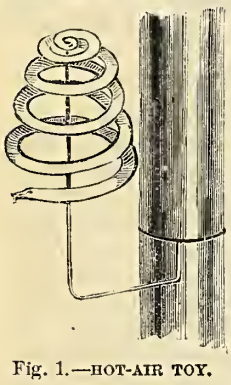


Fig. 1.—HOT-AIR TOY.

The answer to this must be, "the heat of the sun." Before we talk about the air in motion, we must make sure if we know a few facts about air. I suppose it is not necessary to prove to those young people who are old enough to read this, that the air, while we can not see it, is a real substance, as much as a board or a rock. If you tie securely the neck of a partly blown-up bladder, or an India-rubber foot-ball, you can not possibly, by pressing it with your hands, bring the sides of the bladder or ball together. Even if you stand upon it, it will hold your weight. This readily shows that air is a substance; you can have another proof by rapidly moving a common fan or even a shingle. If you move either of these back and forth edge-wise, and then flat-wise, you will find a great difference in the ease of doing so. When you move the flat surface against the air, as in fanning, you find a resistance; there is something, though you can not *see* what, that prevents a rapid motion in this direction, a real substance. Like most other substances,

Air Expands when Heated,

that is, it takes up more space than it did before. If you place the partly filled ball or bladder near the fire, the air within will be heated, and will expand until it quite fills out the thing that holds it. Warm air being lighter than cold air, rises. You know that in an open fire-place, the warm air is passing up the chimney and carrying the smoke. Tissue paper balloons are filled with hot air, and this being much lighter than cold air, rises, and takes up the balloon. That warm air is always rising from a heated surface may be shown by one of those toys that boys often make. A circle of paper is cut in a spiral form, and placed on a wire as in figure 1. This when placed on the stove will revolve very rapidly, though the upward motion of the air is so slight that it cannot be felt. In a room where there is a fire in a stove, or where even a lamp is burning, there is always a disturbance.

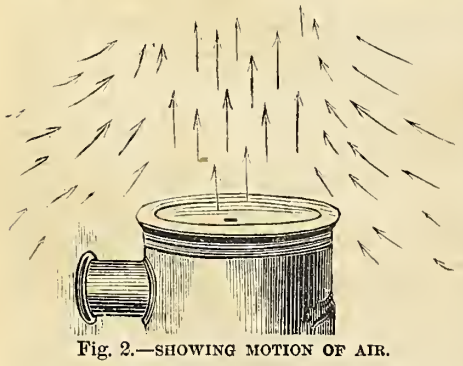


Fig. 2.—SHOWING MOTION OF AIR.

The Air is Constantly in Motion.

It rises, when heated by the stove, and there is also another motion, colder air rushes towards the stove to take its place, as shown in figure 2, where the arrows show the rising of the heated air, and the rushing in of cooler air from all sides. These movements of the air, caused in the room by the heated stove, by a lighted lamp, or other source of heat, so gentle that we do not feel them—currents, we call them, are governed by the same laws as

The More Rapid Movements We Call Wind.

Where air is unequally heated there is motion. Franklin was a great philosopher for his day, and illustrated very important facts by the most simple experiments. He showed that lightning was the same as electricity, by means of a boy's kite and a key, and to show that when two bodies or quantities of air were unequally heated there would be currents between the two, he used simply a candle. You can readily try Franklin's experiment. Open the door a little between a room in which there is a fire, and one where there is no fire, and the air is colder—just a crack will answer. If you hold a candle at the top of the door, the flame will at once be bent and point towards the cold room; if you hold the candle near the floor, the flame will point in the opposite direction, showing that there is a current of warm air going out above, and another current of colder air coming into the room below.

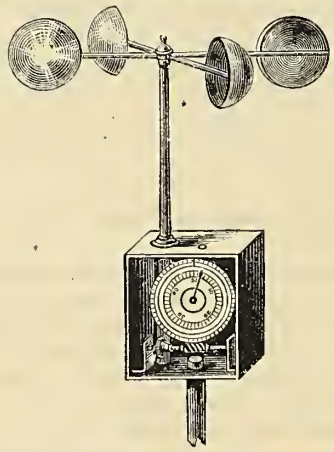


Fig. 3.—AN ANEMOMETER OR WIND MEASURER.

"What has this to do with the Wind?"

you may ask. It shows in a small way what is taking place on the surface of the earth. The stove heats the air of the room, and there is a disturbance, the air is set in motion, and its currents are passing in various directions. When a portion of the earth is heated by the sun, that heats the air, which rises, and air from cooler parts comes rushing in to take its place—this air comes with greater or less force, and when we can feel it moving, we call it wind. You know that the part of the earth near the equator is the hottest, the heat of the sun falls more directly there than elsewhere. The heated air rises, and air from both the north and the south comes in, and we might expect that there would be a constant wind blowing towards the equator from both directions. But there is something else to be considered; the earth is rapidly revolving, and this changes the direction of these winds, which in some parts of the ocean blow so contantly from the north-east and south-east that they are called "trade winds." There are other winds besides these; wherever there are deserts, or wide plains, these become heated and cause local winds. The islands in the hot portions of the globe have a sea-breeze in the day and a land breeze at night. When the island becomes heated, the air above it rises, and this starts a current towards the island from the sea. As night comes on the island soon cools, and when it becomes cooler than the sea, the wind blows away from the land. Winds are much affected by lakes, mountains, etc., but their origin may be traced to the sun, which heats the earth's surface unequally. There is a great difference in the force of the wind: sometimes so gentle that it barely moves a leaf, again so strong that we can barely make our way against it, up to the violent tornado which sometimes unroofs and destroys buildings, uproots trees, and often carries men and animals along in its course. The rate at which the wind travels is measured by an

Anemometer, or Wind Measurer.

The name looks hard to remember. You are familiar with the last half of it in thermo-meter, and baro-meter, and probably know that *meter* means a measure. If you will recollect that *anemos* is the Greek word for wind, I think you will have no trouble with Anemo-meter. There are different kinds of these instruments, but the one most in use is shown in figure 3. It consists of four brass cups arranged upon arms; these are readily turned by the slightest wind, and they move a wheel work which shows how many revolutions the cups make in a given time, and consequently how fast the wind is moving. A gentle breeze moves four and five miles an hour, a brisk wind 20 to 25 miles, and a violent hurricane from 80 to 100 miles an hour.

Another Boy—His Sad Fate.

In the December *American Agriculturist* we gave some account of "Those Two Boys," who came to our office after a hard experience, and who were fortunately restored to their parents. Last autumn another boy of 16, who had got similar sea-going notions into his head from reading the high-colored false stories about life at sea and on ship-board, stole away from home in the same manner. Unfortunately he found a sailing craft just wanting a boy, and he was taken in. The vessel went up to a Maine port, and on Jan. 1, sailed southward. When off Cape Ann, Mass., the vessel was struck by a gale and disabled. The men and boys sprang into a boat, and for three days and nights they were without food or water, wet with rain and sleet, and chilled with cold. When picked up by a chance vessel, two men and our wayward boy were lying in the boat pale in death, and frozen to rigidity. The poor boy delirious with hunger, thirst and cold, had kept asking, "when shall we get to land?" One of the men stripped off his own coat and muffled him in it, but it was of no use. He talked of his parents to the last, sent a fond message to them, and the sleep of death came on. How many similar cases have there been, on the 196 steamships, and the many hundreds of sailing vessels that have succumbed to the ocean's fury during the single year past. Pity indeed, that the watery graves of these deceived and deluded boys, led to flee from home and friends, could not have been filled by those men who, for the money received, write and publish story books and papers for boys filled with the enchanting falsehoods that carry away the imagination of young lads who would otherwise grow up as good men and useful citizens. Boys, don't believe these stories—don't read them—they are sugar-coated poison.

The Death of Aunt Sue.

The announcement in the daily papers that Mrs. Susanna Newbould died at her residence in Brooklyn on Jan. 9th, was read with painful surprise. The last of her frequent notes to us had been as bright and cheery as ever; there was nothing in it to show that Aunt Sue was even ill, and the news of her death came to us as suddenly as it will to you. Aunt Sue has so long provided our young readers with pleasing amusements that they have looked upon her as a friend. Many of you who have written her, know how kind were her replies to your questions, and how even the briefest note seemed to be overflowing with good feeling. One must have been personally acquainted with her to know how bright and witty, and at the same time how loving and lovable she was. Besides being a talented writer, she was a skilled musician and composer of music, and an accomplished artist. Some of her notes show her wonderful readiness at illustration; where a picture would express her idea better than words, a rapid, often highly amusing sketch would tell the story. But with all her

many accomplishments, she will be longest remembered by those who knew her, for her kindness of heart and active sympathy with every good cause.

Paper Ornaments—Easily Made.

The engraving shows a very pretty "Card Receiver," which a little German girl brought to our

CARD RECEIVER.

office, with many other articles made in the same manner. The one above she offered for 25 cents, and we learned that she and her sister (one ten and the other six years old), did a good deal towards supporting the family by making and selling the things at these prices. The Receiver has several colors, tastefully arranged, which can not be shown in the black printing, and it is quite firm and strong. To make it, paper of different colors is cut into strips of uniform width, about three-fourths of an inch wide, in this case, but the width is to be varied according to the article to be made. These strips are then rolled together, loosely or firmly according to the strength and stiffness desired in the article. They are then fastened together with gum or paste, as shown in the engraving, the different colored papers arranged to any one's own taste. The seller of our pattern had a great variety of sizes and forms, round, oblong, star-shaped, etc. Any of our young readers can readily make up a fine assortment of ornamental things, by saving the various bits of paper that come in their way, and cutting and pasting them as here shown.

Our Puzzle Box.

TRANSPOSITIONS.

Alas! you'll often find me
Where liquors dire are sold
The evils I've created
Can never half be told.

Oh! hasten to transpose me,
Then listen to the notes
So musical and happy
From countless little throats.

ADDITIONS AND TRANSPOSITIONS.

(*Example:* Add a letter to an animal and transpose into a boat. Bear + G = barge.

1. Add a letter to a vestige and transpose into an article of furniture.
2. Add a letter to an article of clothing and transpose into a person who might wear it.
3. Add a letter to something odd and turn it into something old.
4. Add a letter to a fruit and change it to a flower bred for pickling.
5. Add a letter to a couple and transpose it into one of the months.

CROSS-WORD-SENTENCE.

My first is in the apricot, but never in the plum,
My next is in the finger seen, but never in the thumb,
My third is found in Jersey, but not in New Orleans,
My fourth is found in curtain, but not in veils or screens.
My fifth is in the purling streams, but never in the ocean,
My sixth is found in chemistry, but not in drug or lotion.
My seventh is found in gingerbread, but not in hot-cross buns.
My eighth is in a hundred weight, but not in forty tons.
My ninth is found in Paradise, tho' never seen in Eden.
My tenth in Scandinavia, but never found in Sweden.
My eleventh's seen in winter, but never in December,
My whole is excellent advice, 'twere well we should remember.

WORD BUILDING.

(Add one letter at a time to the original word in each of the following puzzles; sometimes transposing the order of letters.

Example.—A month, a body of armed men, to wed, one who suffers death for the truth.—May, army, marry, martyr.)

1. Something despicable,—a kind of curtain,—foreign fruit,—a pretty flower.
2. An illuminator, — an herb,—a vehicle, — adjuncts to fires,—odd.
3. To divide,—coneise,—a vial,—a clergyman.
4. A unit,—a stick,—a body of water,—boats.
5. An article of clothing,—to melt,—a grain,—anything curled or twisted, — to encounter and sustain.
6. An article of clothing,—an insect,—to join at an angle of 45,—a recluse.
7. An article of clothing,—a boy,—a fruit,—a place of worship,—a garland.
8. A word of blame,—an elf,—a quarrel,—a fay,—to fill with air.

Answers to Puzzles in the January Number.

COMPOUND METAMOREMS. 1. Mix. 2. Zone. 3. Fortunate. 4. My. 5. Boms. 6. Give. 7. Intend. 8. Pink. 9. Honey.

SQUARE WORD.—
L am B,
A lo E,
M ol E,
B ee T.

CROSS-WORD.—Impertinence.

BIBLICAL NUMERICAL ENIGMAS.—A good name is rather to be chosen than great riches.

PATCHWORK.—1. Yelk. 2. Yoke. 3. Vow. 4. Bistre. 5. Dusk. 6. Lasso. 7. Pound. 8. Crate.

PI.—Duties fulfilled are always pleasures to the memory. Self-reliance is quite distinct from self-assertion.

FOUNDATION WORD.—1. Ale-rice, tract. 2. Clear-trace-it. 3. Ire-cattle-car. 4. Trace-article.

TRANSITIONS.—1. Boat, bolt, bold, hond, band, laud. 2. Dawn, down, sown, soon, noon. 3. Boot, blot, slot, shot, shoe. 4. Rain, fain, fail, foil, fool, foot, soot, slot, slow, snow. 5. Lawn, laws, lass, pass, pats, pate, pale, pall, pill, sill, silk. 6. Piuk, pine, pile, pill, poll, pool, fool, foot, boot, blot, slot, sloe, floe, flue, blue.

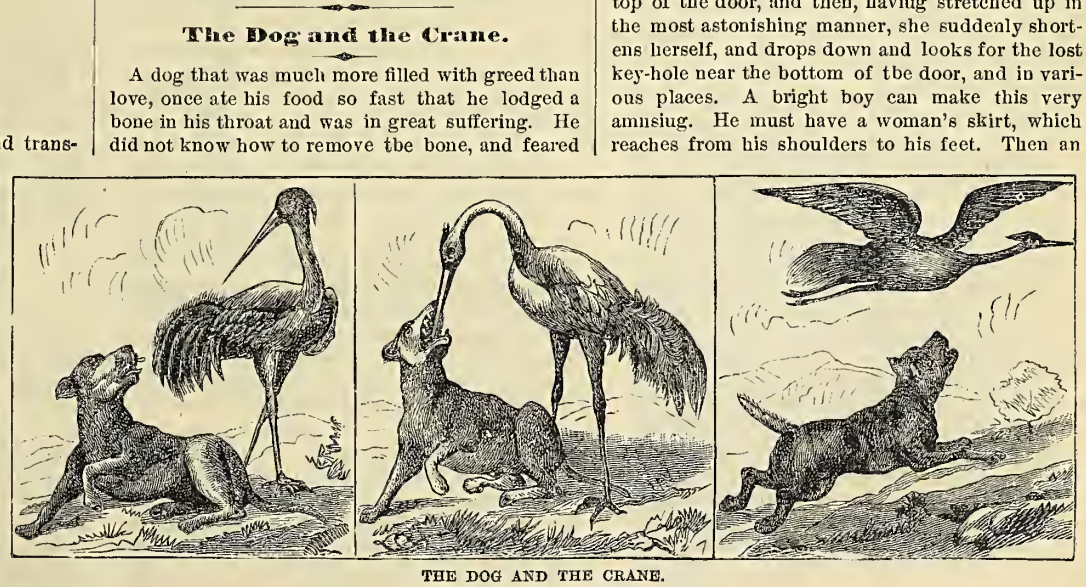
HAND IN GLOVE.—1. Abate. 2. Caper. 3. Shares. 4. Lowly. 5. Ledger. 6. Crate. 7. Scowl.

ANAGRAMS.—
1. Maintenance.
2. Bounteous.
3. Sheathe.
4. Eliminate.
5. Copartner.
6. Fractured.
7. Imprisonment.
8. Distinguished.
9. Apportionment.
10. Protectionist.

The Dog and the Crane.

A dog that was much more filled with greed than love, once ate his food so fast that he lodged a bone in his throat and was in great suffering. He did not know how to remove the bone, and feared that it might cause his death. A crane chanced to pass near where the distressed dog was lying, and being asked in plaintive tones to draw the bone from the dog's neck did so at once, by means of his long bill. So soon as the bone was removed and the fear of death was gone, the thankless dog turned to the crane, and said that the long-necked bird might thank him for not biting off its head when such a fine chance was given. At this the bird clapped its wings and was quickly out of reach of the enraged dog, which would have quickly taken the life of the helpful crane. The dog again forced a bone into his throat, and groaned and lay in great pain upon the earth. The crane again found the dying wretch and came to help him. The dog thought the bird had come to taunt him, and at first would not let it remove the bone. The crane told the dog that it came to help him the same as when called the first time, and would show that its heart was full of mercy. The dog believing that death was near, thought there would be nothing lost by letting the crane come to his aid. The dog was much pleased as well as astonished to find the bone quickly removed, and from that day was a warm friend to the crane.

There are perhaps some human dogs that treat the helpful crane of friendship in much the same way. If this story is not true to the letter, the fable nevertheless has its application.



THE DOG AND THE CRANE.

How to Amuse Your Friends.

"H. T. W.," asks for some amusements for a gathering of young people, which will need no preparation before hand. There are several such; one which all can take part in, and which will cause much fun, is: to hand each one present a scrap of paper, and ask each to draw, with a pencil, from memory, the size of a dime, or 10-cent piece. The circles that will be drawn, their difference among themselves, and the manner in which they are unlike the real coin, is very amusing. Such tricks as these have their uses in educating the eye. Another, quite as surprising in its results, is to pin a piece of paper to the wall, or better to a door, extending from the floor upwards for a foot or more. Now ask each one to mark on this paper with a pencil the probable hight of an ordinary hat—one of the stiff kind, called "plug" hat, usually worn by men. The difference between the marks and the real hight of a hat, when placed on the floor, will raise a hearty laugh. It is well to ask each one, as the mark is made, to put his or her initials against it. Of course the larger the number who take part in amusements of this kind, the greater will be the merriment. A very funny trick is called

The Lost Key Hole.

An old lady who, on going to market, locked up her house, has come home; she tries to find her key-hole. She does not see it at the usual place, and gradually looks higher and higher, up to the top of the door, and then, having stretched up in the most astonishing manner, she suddenly shortens herself, and drops down and looks for the lost key-hole near the bottom of the door, and in various places. A bright boy can make this very amusing. He must have a woman's skirt, which reaches from his shoulders to his feet. Then an old-fashioned bonnet is required, and this should be fastened upon a broom; a large shawl should be pinned to the broom, just below the bonnet, so that when the boy holds the broom, the shawl will drop down over his dress. When the boy holds the broom so that the bonnet will be only as high as his head, he is like a little old woman. As in searching for the key-hole, he becomes taller and

A GROUP OF CHILDREN IN THE MIDST OF THEIR CANDY PULLING.

taller, the effect is extremely funny. When he suddenly shortens the figure by lowering the broom, or when, having lifted it as high as will answer, he suddenly bends over, taking the broom with him, to find the key-hole at the bottom of the door, the effect is so ludicrous that it is always hailed by shouts of laughter. The boy who plays the old woman should always keep a side view towards the company, and never lift the broom so high as to separate the shawl on the broom from his own dress, and thus make known the secret of the trick. This should be rehearsed before showing it to a company, to make sure that the dress is all right. It would be well to let some person keep up a talk in explanation of the old lady's doings.

A Candy Pull.

Spring, in many parts of the United States, brings with it the making of the Maple Sugar, and all the sport which attends this work in the woods. It was my good fortune to be brought up on a farm that had a large number of maple trees in the forest, and yearly these trees were tapped, and the sap that flowed from them was gathered in great vats, and boiled in large kettles until it was a thick syrup. Many a time have I watched the burning embers through the night, and with eyes weeping from the smoke, have fallen asleep in the cabin while some one kept up the fire and the boiling of the sap. This is the most familiar kind of sugar making in the Northern States; but the boys and girls who live in the far South where the weather is much warmer than in the region of New York are acquainted with another method of sugar making, that is more complicated than the making of maple sugar, as it is also more extensively practised. There, the plants from which the sap is obtained, are grown as a crop, much as corn is raised in the North; and instead of cutting a hole in the tree and letting the sap run out along a groove in a spile, the whole plant is cut off near the ground, and run between rollers which squeeze the juice from the stalks of the sugar cane. After this the juice is boiled down in large pans, and finally there is a thick syrup from which the sugar is formed. The sugar as it first forms is of a brown color, and needs to be further treated, or purified, before it is white or colorless, as we see it in its pure state in the loaf or granulated sugar so generally found upon the dining-room table.

Not the least interesting things connected with the sweet product of the sugar cane is the pulling of candy. It is scarcely necessary for me to describe the steps that need to be taken to have a candy pull. Of course there must be the candy, and then it needs to be pulled. A quantity of molasses is boiled in some sort of kettle or other dish, until it is thought to be "done," that is, thick enough when cold to be taken in the hand, and yet not so hard but what it can be easily pulled out into long ribbons. It requires some little skill or experience to know just when to remove the boiling candy. I recall one time when we took off the kettle too soon, and all hands had a very sticky time, even the free use of butter did not prevent the candy from getting between the fingers, and clinging close to one hand when it was desired to put it into the other. A few minutes more of boiling would have taken out the excess of water, and made the candy hard enough to be handled not only with ease but also with much pleasure. In what is the fun of pulling candy? I suppose, because it is so easy to make it take any shape. Children like to play with wet clay or stiff mud for the same reason. I have known a child to find a good deal of fun in a piece of putty, simply because it was plastic, and could be molded easily. But candy is far better than putty or clay, because it is sweet, and most agreeable to eat. It is rare for a party of candy pullers to have as much candy at the close of the pull, as when they began. As it is pulled it keeps growing less and less by an occasional bite been taken just to see how it is getting along. Another thing that makes candy pulling attractive, is the change of color that takes place in the candy as the work progresses. It grows whiter and whiter, and this leads to a strife to see who can get the whitest roll in the shortest time. It is not always the one, who, with a little greed it may be, takes the largest quantity to pull, that wins in this race. Perhaps the most enjoyable thing connected with a candy pull is that it offers every one, young and old, an opportunity to *take a part*. No one need be left "out in the cold," as may be the case with some kinds of amusement.

Neat house-keepers are sometimes opposed to candy pulls as there is room for much soiling of furniture, clothing, etc. It is seldom that a child comes out from a candy pull as neat and clean as when he went in. He may be sweeter by far, and yet it is a sweetness that will wash off. Take it altogether I do not know of a better way to make a gathering of children remember their visit to a friend than to give them a candy pull. It is also as evident that it is an excellent method of impressing upon the one who gives it, the fact that the pull has been held in the house.

The engraving herewith presented shows a group of merry children in the midst of their candy pulling sports. UNCLE HAL.

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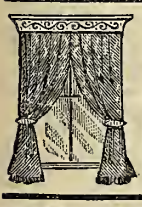

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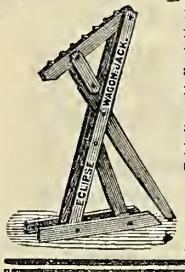

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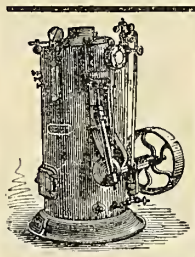

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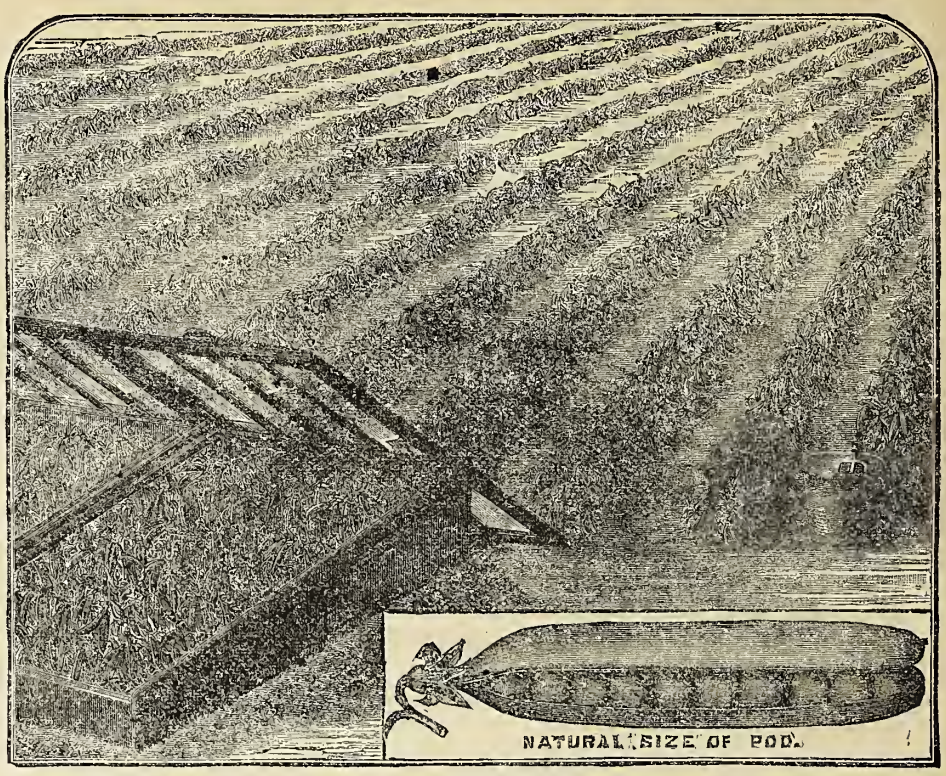

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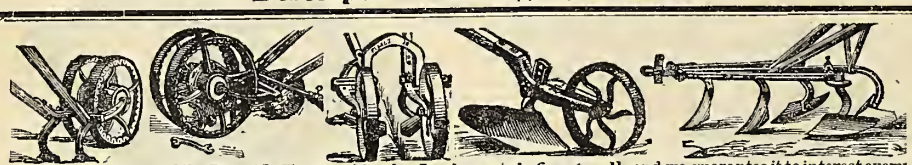

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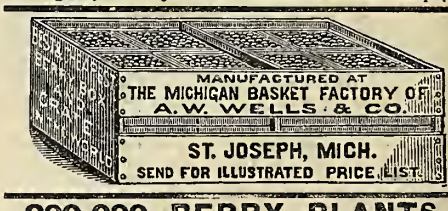

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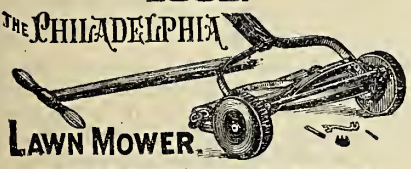

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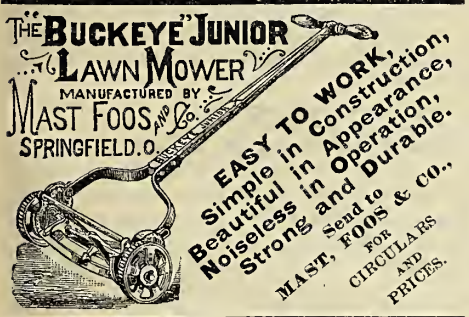

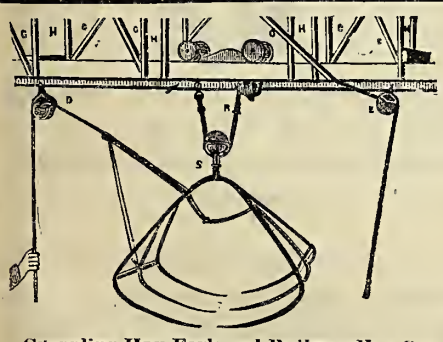

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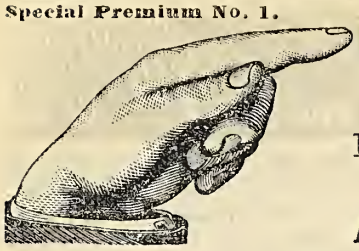

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Publishers' Department.

Hiram Sibley & Co., the Rochester, N. Y., Seedsmen, offer $500 cash in prizes for the best essays on gardening in the Southern States.

Bound Volumes for Reference.—"I am not a subscriber," writes a gentleman in Washington, D. C., but I get the bound volumes, and have them for the last seven years, having received that for 1881 a few days ago. I do not know what I should do without them, as I can find almost everything, and each year it is better and more valuable."—We find that a great number purchase the bound volumes to use as a library of reference; that for 1881 is now ready.

The "Acme" Pulverizing Harrow.—This implement was figured in our columns a year or more ago, and described as a most effective implement for pulverizing the soil and preparing a seed bed. Since then some improvements have been made in the form of the teeth, which are unlike those of any other harrow, and well calculated to do effective work. That the manufacturers feel confidence in the utility of the "Acme" is shown by their offer to send one "on trial" to any responsible farmer in any part of the country.

Dairy Supply Firm—Change of Name.—The firm of Whitman & Burrell, so well known as extensive dealers in dairy supplies at Little Falls, N. Y., by the retiring of Mr. R. S. Whitman, takes the new style of Burrell & Whitman. They propose, as heretofore, to keep everything, from a steam engine to a butter ladle.

Broad-Cast Seed Sowers.—A number have inquired about these and ask which is the best. We have no doubt that where much sowing of grass and other small seeds is to be done, a machine will soon pay for itself. The leading kinds are the "Cahoon" and the "Philadelphia." As with all similar machines, each has its friends and advocates. The better way is for each one to send for the descriptive circulars, and form his own judgment. As between good implements we can not decide.

Percheron Horses.—Those who have recently made inquiries as to Percheron horses are informed of an important sale of twenty-five imported stallions and mares in Baltimore upon the 22nd day of the present month. Messrs. W. T. Walters & Co., 68 Exchange Place, Baltimore, will furnish catalogues on application.

One Hundred Too Many.—The types at the end of the long advertisement of Messrs. B. K. Bliss & Sons, last month, read 134 Barclay street. It should have been 34. One in hunting for the higher number would find himself on the pier.

Catalogues Received.

The dealers who usually issue their Catalogues during the month of February, seem to be this year later than usual. We give a list of those that have come to hand up to the time of going to press. The names are placed alphabetically, and where more than one branch of business is followed, as seedsmen and florist, the entry is made under the one which seems to be the most prominent unless circumstances warrant separate entries.

SEEDSMEN.

The large dealers offer implements of various kinds, and most of them take orders for small fruits and flowers.

R. H. ALLEN & Co., 189-191 Water street, New York.—Characteristically neat, and, as usual, very full in farm and field seeds—with novelties.

HUGO BEYER, New London, Iowa.—Neat and compact with numerous Western specialties.

B. K. BLISS & SONS, 34 Barclay St., New York.—As usual, this offers novelties in all departments, is abundantly illustrated and has a fine colored plate of new Pansies.

J. BOLGIANO & SON, Baltimore, Md.—One of the oldest seed houses in the country, keeps up with the novelties, and has several specialties of its own.

ALFRED BRIDGEMAN, No. 876 Broadway, New York.—Another old house with a copious catalogue containing many novelties and specialties. Also a special list for market gardeners.

WALDO F. BROWN, Oxford, Ohio.—An excellent selection, accompanied by sensible and practical remarks.

W. ATLEE BURPEE & Co., 219 and 221 Church St., Philadelphia.—Farm and Garden Seeds, with many specialties; also Blooded Stock and choice Poultry.

WILLIAM H. CARSON, 114 (formerly 125), Chambers St., New York.—A full list, with numerous specialties. Particular attention given to supplying Market Gardeners.

COLE & BROTHERS, Pella, Iowa.—The choicest varieties of Field, Garden, and Flower Seeds; also Horticultural Implements and Books. They offer premiums in flower seeds to those who subscribe to the *Am. Agriculturist.*

A. D. COWAN & Co., American Seed Warehouse, 114 Chambers St., New York.—A well illustrated catalogue, with many specialties in Vegetables and Flowers.

C. W. DORR, Des Moines, Iowa.—Seeds largely grown by himself. Several specialties. Also nursery stock.

D. M. FERRY & Co., Detroit, Mich.—Besides its brilliantly illuminated cover, several colored plates are given within. Several engravings illustrate the buildings and operations of what is, in some respects, the largest seed house in the world.

L. W. GOODELL, Amherst, Mass.—Offers Seeds largely of his own growing, and gives a select list of choice varieties.

JOSEPH HARRIS, Moreton Farm, Rochester, N. Y., has of late years gone largely into seed raising. His catalogue of Field, Garden, and Flower Seeds, offers inducements to purchasers.

R. D. HAWLEY, Hartford, Conn.—Vegetables and agricultural seeds, including several novelties. Also, farm and garden implements.

PETER HENDERSON & Co., 35 Cortlandt St., New York, has on its title page, "Everything for the Garden." An examination of its contents shows it to be full of "everything" that a gardener needs, abundantly illustrated.

W. H. JOHNSON, Snowflake, Antrim, Co., Mich.—Price list of seeds and cuttings of deciduous and evergreen Forest Trees. Also "Forest Leaves," a pamphlet of brief instructions.

JOHNSON & STOKES, 1,114 Market St., Philadelphia, besides a general stock, offer several special varieties.

DAVID LANDRETH & SONS, 21-23 South 6th St., Philadelphia, give with their catalogue a "Rural Register," or Almanac, which includes a calendar of the work for each month. The seed farms of this firm are illustrated. Their reputation has long been established.

A. W. LIVINGSTON'S SONS, Columbus, O.—A full list, with various novelties. This firm produced "Livingston's Perfection" Tomato, which is glory enough for one seed house.

J. F. MENDENHALL & Co., Indianapolis, Ind.—A handsomely illustrated catalogue of Seeds of all kinds.

JOHN MYERS, Saratoga, N. Y., raises a select list of Seeds, and offers Small Fruits and Apiarian Supplies.

E. A. REEVES, No. 58 Courtlandt street, New York.—Plants and implements, besides seed, make a very large and full catalogue, lavishly illustrated.

J. B. ROOT & Co., Rockford, Ill.—This catalogue keeps up its freshness and interest, and besides seeds offers a full list of vegetable plants.

R. H. SHUMWAY, Rockford, Ill.—A list of all desirable varieties, and most abundantly illustrated.

HIRAM SIBLEY & Co., Rochester, N. Y., and Chicago, Ill.—This is one of the most elegant, as it is one of the most complete of the catalogues of the season. Its abundant contents are beautifully illustrated.

HENRY N. SMITH, South Sudbury, Mass.—A select list, with several specialties in Vegetable Seeds.

JAMES M. THORBURN & Co., No. 15 John St., New York.—This is an immense catalogue, and while illustrations of new things are introduced, the compact form of former years is still retained. Besides vegetable and flower seeds, with all the novelties, it has a fuller list of grass and tree seeds than is usually offered.

THORBURN & TITUS, 158 Chambers street, New York.—Besides seeds, with full directions for culture, bulbs, plants, and implements.

ISAAC F. TILLINGHAST, La Plume, Pa., publishes his catalogue in his quarterly "Seed Time and Harvest;" it always contains something sensible and practicable.

VANDERBILT BROS., No. 23 Fulton St., New York.—Issue a compact seed list, and another with seeds and illustrations of a vast stock of farm implements.

JAMES VICK, Rochester, N. Y., in his Floral Guide, give copious illustrations of flowers from seeds, greenhouse plants and vegetables, making it noticeable among all others.

SAMUEL WILSON, Mechanicsville, Pa., has a full list, and several specialties, among them the "Japanese Nest Egg Gourd."

NURSERYMEN (INCLUDING SMALL FRUITS) AND FLORISTS.

H. S. ANDERSON, Union Springs, N. Y.—A general list of small fruits, with a circular for the Duchess Grape.

CHAS. BLACK & BRO., Hightstown, N. J.—A list of fruit and ornamental trees, making a specialty of Peaches.

R. J. BLACK, Bremen, Ohio.—A full stock of fruits, with many new western varieties, especially in Apples, not generally offered.

J. G. BURROW, Fishkill, N. Y.—A Strawberry catalogue of the leading kinds, with testimonials as to the excellence of "Primo."

JOHN BURR, Leavenworth, Kansas.—The "Early Victor" Grape.

GEORGE W. CAMPBELL, Delaware, Ohio.—Small fruits, Roses, etc. The Grape list, as usual, very full, with all the recent novelties.

JOHN LEWIS CHILDS, Queens, N. Y.—In his "Guide to Lily Culture," gives a remarkably full illustrated list.

D. CONGER, Wolcott, N. Y.—Grapes and ornamental plants, with some new varieties.

THE DINGEE & CONARD Co., West Grove, Pa., have long made a specialty of Rose Culture. Their "Guide" gives full instructions, and an immense list; prices low.

FRANK FORD, Ravenna, Ohio.—Small fruits and seeds specialties. "Early Cotton" apple, Alpha tomato, seed potatoes, etc.

G. H. & J. H. HALE, South Glastonbury, Conn.—General list, with several specialties and a colored plate of the "Manchester" Strawberry.

R. S. JOHNSTON, Stockley, Del.—A general stock. Peaches a specialty.

J. T. LOVETT, Little Silver, N. J.—Small and other fruits, and several specialties and novelties, with handsomely illuminated cover. Also, a special circular devoted to the "Manchester" strawberry and the "Souhegan" blackcap raspberry.

J. N. MENIFEE, Oregon, Mo.—A select list of the best Small Fruits.

NANZ & NEUNER, Louisville, Ky.—A remarkably full catalogue of greenhouse and bedding plants, with many novelties.

S. OTHO WILSON, Raleigh, N. C.—General nursery stock. "McCuller's winter" apple "emphatically our specialty."

E. P. ROE, Cornwall-on-Hudson, N. Y.—Full of the newest and best small fruits, and characteristically fresh and instructive.

ED. C. PHELPS, Newport, Benton Co., Oregon.—General nursery and greenhouse stock; not behind dealers on the Atlantic side in fullness and variety.

C. M. SILVA & SON, Newcastle, Cal.—A general fruit list, including many kinds peculiar to the Pacific Coast.

JABEZ WEBSTER, Centralia, Ill.—General fruit and ornamental stock.

DAVID R. WOODS, New Brighton, Pa.—A neat and full list of greenhouse and other plants, bulbs, and seeds.

IMPLEMENTS, LIVE STOCK, FERTILIZERS, ETC.

W. S. BLUNT, 94 Beekman St., N. Y.—Illustrated catalogue of various styles of "Universal Force Pumps."

WM. L. BRADBURY & Co., Nasons, Orange Co., Va.—Horses, Sheep, Swine, and other animals, at the Piedmont Stock Farm.

BOWKER FERTILIZER Co., New York and Boston.—Testimonials as to the value of the various fertilizers made by this prosperous Company.

M. CARTER, Plainfield, Ind.—Automatic Gates.

FARMER'S M'F'G COMPANY, Cincinnati, Ohio.—A description of the Twin Dasher Churn.

ALEX. KERR, BRO. & Co., Baltimore, Md.—A treatise on the use of German Potash Salt (Kainit).

EDWARD HARRISON'S ESTATE, New Haven, Conn.—Illustrated catalogue of Flouring Mills and Machinery.

TIMOTHY B. HUSSEY, North Berwick, Me.—Plows, Harrows, Cultivators, and other farm implements.

JOHN Q. MAYNARD, 95-97 Liberty St., New York.—Handsomely illustrated list of Labor-saving Specialties, including forges and various useful tools.

MORRIS, LITTLE & SON, New York.—Little's Chemical Fluid for Dipping Sheep.

FENCE & MACHINE Co., Delaware, Ohio.—Powell's Sulky Plow.

SANDWICH ENTERPRIZE Co., Sandwich, Ill.—Enterprize Wind Mills, Feed Mills, Pumps, etc.

SANDWICH M'F'G Co., Sandwich, Ill.—Corn Shellers for hand and power, Churns, Horse-powers, etc.

SMITH REFRIGERATOR Co., Michigan City, Ind.—An illustrated catalogue of the Alaska Refrigerator in great variety.

F. S. PEER, East Palmyra, N. Y.—Jersey Cattle and Cotswold Sheep.

UNIVERSAL COOLER Co., San Francisco, Cal.—Illustrated pamphlet, describing Artificial Coolers, Sanitary Filters, etc.

E. & O. WARD, 279 Washington St., New York.—"A Circular of Advice," Useful to all who send farm produce to market.

WHEELER, MELICK & Co., Albany, N. Y.—Steam Engines, Horse Powers, Threshers, and a long list of other farm machines.

E. WHITMAN & SONS, Baltimore, Md.—A large illustrated catalogue of a great variety of agricultural implements.

H. J. WOODEN & W. A. TRESCOTT, Fairport, N. Y., describe the Climax Evaporator and auxiliary machines.

MACHINERY, &c.

HENRY H. BABCOCK & SONS, Watertown, N. Y.—Illustrates the Watertown Windmill, with pumps, etc.

ALVIN H. FOGG, Rockland, Me.—Illustrates his "Strawberry Car."

MISCELLANEOUS.

S. L. ALLEN & Co., 127-129 Catharine street, Philadelphia.—A descriptive catalogue, illustrating the uses of the Planet Jr. Seed Drill, Wheel Hoes, etc., and their other excellent implements.

HOMER H. HEWITT, Williamsburg, Pa.—A new illustrated list of high-class poultry and Yorkshire pigs.

THOMAS HIGGIN & Co., London.—An American edition of the "Dairyman's Almanac," which, among many other matters, mentions Higgins' Salt.

E. W. ROSS & Co., Fulton, N. Y.—The progress made by Ensilage in this country is shown by the manufacture of such machines as the "Giant," also, "Little Giant" cutters as are offered by this firm.

SEDGWICK BROS., Richmond, Ind.—Wire net-work fences and gates, including automatic gates.

EUROPEAN CATALOGUES.

CUSIN & GUICHARD, Lyons, France.—Flower Bulbs and Roots.

MAX LEICHTLIN, Baden Baden, Germany.—A catalogue of one of the rarest collections in Europe.

TOMLINSON & HAYWARD, Lincoln, Eng.—A thick pamphlet with colored and other illustrations giving details as to their Glycerine Sheep Dip.

Peaches and Pears.—"E. D. R."—If your land will bear good crops of corn it is likely, so far as the soil is concerned, to be suitable for fruit. The climate and location will probably decide the question as to peaches. If the thermometer goes much below zero each winter, and there is a succession of freezings and thawings in early spring, their success is doubtful.

The Best Tomato?—"W. G. C.," N. J.—We have not tested every one of the very many now offered, but we can say which is the best we have tried. Livingston's Perfection is, thus far, easily superior to all others, in beauty, solidity, regular form, and excellent quality, that it is not easy to see in what respect any other can excel it. Still we shall go on trying and reporting on new ones, as we have done for the last 20 years.

Fairs for 1882.—The first notice of a fair for this year reached us on Dec. 24th, and was from Sec. Hamm of the Neosho Valley District Fair Association; it states that the 9th annual fair of this Society will be held at its Park, Neosho Falls, Sept. 25–30, 1882. It is desired that the Secretaries of all Fair Associations will give us the earliest possible notice of the date of holding their fairs, that we may be able to answer enquiries, and also to make our fair list as full and accurate as possible.

Maggots in Apples.—"G. E. L.," Merrimack Co., N. H., writes there has been trouble in that vicinity with maggots in the apples. These maggots are "an eighth of an inch in length, and about as large around as a pin; they perforate the apple in all directions." The matter was referred to Prof. A. J. Cook, who says: "The only maggot that has been described as working in apples is the *Trypeta pomonella*, but this is not the one said to injure the apples in New Hampshire. I should judge that this is a new enemy."

"Prairie Rice," Egyptian Corn, Etc.—F. J. Benitz, Fé, Argentine Republic, South America, having seen accounts of the so-called "Prairie Rice," would know more about it, its yield per acre, etc. The plant in question is a form of *Sorghum vulgare*, and has been grown in some States as a fodder crop with fair results. As a grain crop, we doubt if it is equal in any respect to Indian corn. As it is common in most warm countries, we have no doubt that it is in cultivation with you under some of its other names, such as "Durra," or "Doura," "Indian Millet," "Guinea Corn," etc. The name, "Prairie Rice," is a recent one given in one of our Western States. "Ivory Wheat" is another of the fanciful names that have been given to it, and the seeds were advertised in such a manner as to give the idea that it was a new variety of wheat. There are many varieties, and the grain varies from pure white to dark brown.

Matters in South America.—"F. J. B." writes us from Argentine Republic that he is delighted with the country. Frosts seldom occur in winter, and snows are unknown. Land sells at $1 an acre, though in localities near cities it is from $7 to $10. Cattle as they run are worth $8 per head; those fit for the butcher are $12 and $14. A milch cow and calf cost $16 to $18; and working oxen, $25 to $30 each. I met with a gentleman the other day who told me that he had had an increase in his cattle of 42 per cent. Linseed is now cultivated to a great extent—in fact, farmers appear to have a Linseed fever. The seed is exported in large quantities to Europe for pressing out the oil.

Boots in Wet Weather.—We have published it before, but the hint should be repeated every year. When wet boots are taken off and allowed to dry during the night, they shrink and are difficult to get on in the morning. This may be easily obviated by filling the boots, when taken off, with oats. A sufficient quantity of oats kept for the purpose, will allow the boots to dry without shrinking, and prove a great comfort.

An Uneasy Horse.—Mr. "J. R. A.," asks for a remedy for a horse "that will not stand to be unhooked."—We can suggest nothing better than to make a business of "hooking" and "unhooking" the horse with firm and kind treatment until the tendency to be uneasy is overcome.

A Manual of the Coniferæ, containing a general review of the Order; a Synopsis of the Hardy Kinds Cultivated in Great Britain; their Place and Use in Horticulture. With numerous Woodcuts and Illustrations. James Veitch and Sons, Royal Exotic Nursery, King's Road, Chelsea, S. W., 1881. A work on the Coniferæ, which in this country are more popularly known as "Evergreens," may be written from a botanist's or a nurseryman's standpoint. The work, the title of which we have given above in full, is essentially the work of a nurseryman. He does not trouble himself about the critical distinctions of genera, which so puzzle the critical botanist, but taking the trees as he finds them, endeavors to show their uses to the cultivator, and to give their behavior under cultivation in England. English nurserymen long ago had their collectors on our Western Coast, and the climate of England being better suited to them, they have had vastly better success with our far western Coniferæ than has attended their trial on the Atlantic slope. But it is not alone to the western American Coniferæ that this work is devoted; it gives those from all countries, and, of course, includes not only those European mountain forms, but those from Japan and Northern China, which as a rule succeed better with us than do those from our Western Coast. The work, a small 4to. of 342 pages, is illustrated both by large engravings showing the port and uses of the trees in landscape, and smaller wood-cuts showing details of structure. We are surprised that the authors retain the name *Wellingtonia gigantea* for the Mammoth Tree of California, while they give *Sequoia sempervirens* for the Redwood; both are of the same genus, and botanists, both American and English, have long ago decided that they both belong to *Sequoia*. But it is not our purpose to find fault with the work, but rather to commend it to the attention of those who, on both sides of the Atlantic, will find it a useful aid in the cultivation of the *Coniferæ*.

Strawberries for Minnesota.—F. G. Bond, Clay Co. In a climate with winters so severe as yours, it will pay to cover all strawberries; even the most hardy will be more productive. Among the newer varieties the Bidwell has proved among the hardiest. With an abundance of straw the protection is simple. When the ground begins to freeze, cover it with straw, plants and all, taking care to work it down to the soil under large plants. Near the coast, we avoid covering the tops of the plants heavily, but you will not be likely to smother them, a danger we must avoid. In spring the straw need not be removed, but go along the rows and open the covering just over the plants.

Raising Hops.—"M. C." wishes to know if we "or any of our correspondents" can give him "any idea about raising a Hop Orchard, when the plants ought to be set," etc., etc. Had M. C. written his name in full, and his address plainly, for the post mark is utterly blind, he would several weeks ago been informed of what we state now. To wit: That our pamphlet on Hop Culture, published to meet such inquiries as his, can be had at this office, post paid, for 30 cents. This gives full details by ten experienced growers in different parts of the country, and is much more extended than any one article can be; it is abundantly illustrated and is just the work that "M. C." wants. If our friends would take the trouble to give their names in full, and see that the address is plainly written, they would be answered more promptly.

Horses and Dahlias.—H. H. Logan, Suffolk Co., L. I., writes that a horse, last summer, gained access to some Dahlias, and ate a considerable quantity of their leaves and stems. The animal soon afterwards went to the barn, ate its evening ration as usual, and the next morning was found dead, though apparently in perfect health the day before. Mr. L. is inclined to regard the Dahlias as the cause of death, for the reason that on one or two former occasions the horse had taken a bite of the plant and did not seem to be well for several days afterwards. While the Dahlia is not regarded as a poisonous plant, it may have a peculiar effect upon horses, and we readily comply with our correspondents suggestions that we ask for information. If any others have observed that the Dahlia is injurious to horses, we hope that they may report.

Millet for Horses.—"M. L. B.," Neodesha, Neb., asks, if millet hay, or millet that has not been threshed, is safe to feed to horses, mules and cattle. "If there is danger, in what quantity would it be safe?"—So many different plants are now grown as millet that we are not sure which kind is referred to. The only dangerous kind is that variously called "Bengal," "Golden," "Mammoth," and Hungarian Millet, and closely resembles Hungarian grass. The alleged danger from this is not due to the amount fed, but its state of ripeness. Each grain has just below it a few small, rough bristles. If cut while the grain is yet green, it may be used freely. If the grain is ripe, it is said that the bristles accumulate in the stomachs of the animals, forming masses which cause trouble.

Farmers' Club.—The "Volinia, Mich., Farmers Club" and some others, turn Postal Cards to good account in giving notice of their meetings. The names of the officers, the order of business, and a list of the dates of the meetings for the year, together with the subjects to be discussed, and the names of those who are to present them, are all plainly given, with room for much more upon the Postal. A properly prepared card of this kind costs very little, and serves each member as a reminder for a whole year.

The Profits of Orange Culture.—"H. A. T." sends us from De Land, Fla., notes on that locality, in which he says: "One acre of orange trees (76) budded five years ago, netted the owner $522. Another took 6,000 oranges from one tree which at a cent and a half each brought $90. Last year 14 trees netted the owner $420. The largest tree I have seen is estimated to have on it 10,000 oranges; the same tree yielded last year $125." These and many other such items indicate that orange culture, properly managed in a suitable locality, is often exceedingly profitable. The State, and orange growing have been greatly injured by high-colored statements of great profits, and at the same time implying that they were within the reach of every one. The impression has been given that the lazy, the shiftless, and all the "ne'er do weels" of everywhere else, can go to Florida and at once become rich from oranges. It is only those who bring knowledge, skill, and constant personal attention to their work, who succeed in raising oranges or cabbages. The advantages are all mentioned prominently, the drawbacks are not noticed. This very letter says: "What we most miss is the butter and milk of the north." Florida still offers most excellent inducements to the right kind of settlers—those who go there knowing that there are difficulties to be met with, and carry a determination to overcome them.

Sunflower Culture.—"C. E. B.," Huron, Dak., asks about the cultivation of sunflowers, as he has seen somewhere an article advising their culture for their seeds, and for their stems as fuel. Our correspondent evidently has in view the growing of them especially to burn, as he says that all kinds of fuel, save hay, is very scarce. So far as we are aware, Russia is the only country in which the sunflower is grown to any extent, and there the oil obtained from the seeds is the chief consideration. It is said that the crop is about fifty bushels of seeds to the acre. French writers on oil-producing crops do not advise the culture of the sunflower, because it requires a very rich soil, and the birds take a large share of the seeds; besides these, the yield is small—about fifteen per cent.—of an oil of inferior quality. We know of no demand for the seeds for pressing in this country, and if raised they must be utilized upon the farm. They are regarded as a valuable food for poultry, and have been given to horses as a stimulant and appetizer. If any of our readers have tried the sunflower as a farm crop, we shall be glad to have their experience. As to the use of the stalks for burning, we think that better fuel may be raised more cheaply. But few plants draw so heavily upon the soil for potash as the sunflower, and unless the land is rich the crop of stalks will not be large. The Ailanthus tree would be better for fuel, and when the trees were once established they could be cut over every year; new shoots springing from the roots would give an annual crop of most excellent fuel. Peach trees grow rapidly and might be raised from the stone, if the climate will allow.

Markets—What of Future Prices?

This is not now so serious a question to many, as it often is at the present time of the year, because a smaller number than usual have grain and other products on hand to sell. As to the outlook, the situation is about thus: Beginning last summer, speculators, in view of the manifest shortage of crops, undertook to control the markets of grain and hog products. Prices were put up and kept up, beyond what Europe could or *would* pay, and exports have been greatly limited. Foreign dealers find more home supplies than expected; consumption has been diminished by high prices; and remote regions, not usually drawn upon, have furnished much larger supplies of Breadstuffs than were looked for.

The speculators still pretend to be hopeful of a demand at almost any price, however high, before the next harvest, while some of the largest holders hope to "unload" upon the "lambs," and so every effort is still being made to sustain the high rates as long as possible. —At this writing (February 10), and during the past two days, it has looked as if a heavy break in prices is close at hand. There has been a material decline within 48 hours. Some predict that prices will drop to last year's figures during spring. This does not seem probable; it will depend upon how far the foreign markets are already provided for. The "longs" among the speculators, who have large stocks on hand, or contracted for at the high rates, may have the financial ability to hold up the market for awhile yet, or even advance figures temporarily, but it hardly looks like it now.

Those who have already been able to get their Wheat and Corn and Hogs into market, and realize the high prices that have prevailed, may well be in a very comfortable state of mind now.

The Extent of the Fertilizer Trade.—Those who can recollect the sensation produced by a single cargo of guano, some thirty years ago, when the question was, "Who will buy it?" may be surprised to learn the vast sums now annually expended in fertilizers. The Bowker Fertilizing Company, in a pamphlet describing its own various products, gives an interesting estimate of the amount annually expended in fertilizers other than barn-yard and stable manures. It presents the following estimates: That Virginia consumes over 40,000 tons; Pennsylvania, over 50,000 tons; New Jersey, over 20,000 tons; New York, over 35 000 tons; Ohio, over 15,000 tons; New England, over 50,000 tons. And the use of fertilizers is rapidly increasing towards the Mississippi Valley, and through Michigan, Indiana, and Kentucky. The consumption in the Atlantic and Middle States is estimated at not less than 500,000 tons, or about $20,000,000 worth.

Three Thousand Dollars, ready money, is a comfortable sum to have on hand by a widow and orphans if the head of a family be removed by death. The Mutual Life Insurance Company's report in another column shows that on January 1 it had in force 101,490 policies, averaging about $3,103 each, with a surplus of twelve million dollars over the necessary amount to make all these policies good, according to the New York State standard. The reduced rates of insurance adopted by this Company have not prevented an increase in its surplus of over a million dollars during the year.

Scaly Legs in Fowls.—"E. E. S.," Union, N. Y. The enlarged scales are usually due to the presence of a small insect which lives and breeds under the scale. It may be cured by the use of the Flowers of Sulphur mixed with lard, or by the application of lard in which a small quantity of kerosene has been mixed. No proportions are given. One writer advises the use of the sulphur ointment for a few days; then to wash the legs with soap and water, and afterwards rub them with a flannel moistened with kerosene.

The Madison Co. (Miss.) Farmers' Club.—A very sensible and wide awake club is that of Madison Co., Miss. While it is desirous that the State should establish Experiment Stations, it does not wait for this, but makes experiments itself. A special committee was appointed, and this committee went to work in a most practical manner. Properly regarding corn as the most important crop, the question that the committee propounded was, we infer, "What do our exhausted lands need in order that they may raise good crops of corn?" The committee went, of course, to some expense, but not for any kinds of "'imeters" or "'omcters." They were extravagant only in the way of tubs, and these were made from flour barrels, forgetful that in the days of witchcraft, one who made two tubs from a barrel was hung as a witch. The tubs were two-thirds filled with soil, "the most exhausted red clay to be found." Corn was planted in each tub, and the soil in each was fertilized with Potash, Phosphoric Acid and Nitrogen, separately and in combination. We have an interesting Bulletin sent ont by the Club, showing the details of the experiments and the results. The great want of the soil experimented with is shown to be Nitrogen, and it appears that this is best supplied by manuring with Cotton-seed. But our object is not so much to give the results of the experiments, as to point out the eminently practical action of the Madison (Miss.) County Farmers' Club. If it can not have an Experiment Station, yet awhile, it invests in tubs and experiments itself. We commend its action to other Clubs not only in Mississippi, but in other States. One fact like this, thus established, raises the value of every acre of land in the State.

The Statement telegraphed all over the country a few days ago that Beatty's Piano and Organ establishment at Washington, N. J., had been destroyed by fire a second time, proves to have been a malicious falsehood. Had such a calamity occurred to so great an enterprise, it would have occasioned universal regret and sympathy from the public. We are glad to hear that the Factory is in perfect repair and full operation, and turning out more instruments than ever.

Cracks in Stoves.—The "English Mechanic" says, mix equal parts of finely sifted wood ashes and clay, and "a little salt." (How much this is the writer does not state). Make into a paste with water, and fill the cracks while the stove is cold. It becomes very hard when heated, and does not crack or scale off.

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Egyptian Beet Seed, extra pure seed	.15	1 50
Choice Yellow Globe Danvers Onion, new	.30	4 00
Southport Large Red Globe, very fine new	.30	4 00
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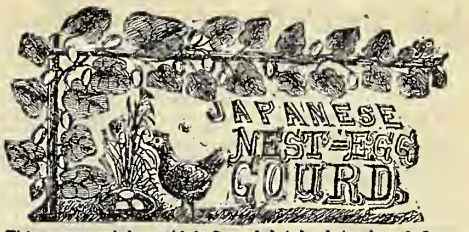

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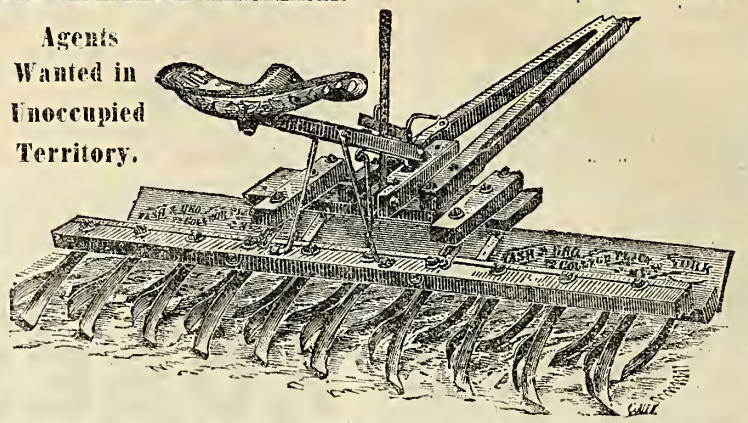

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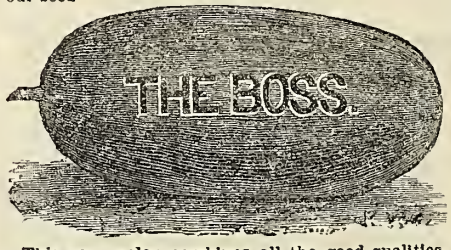

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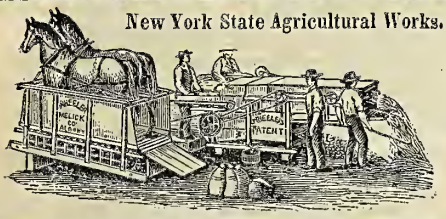

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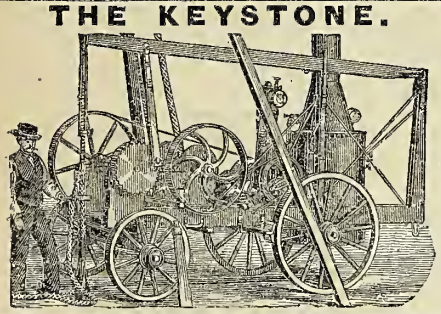

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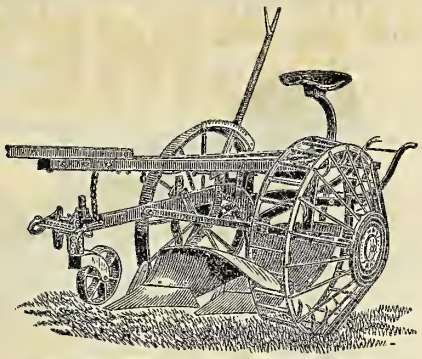

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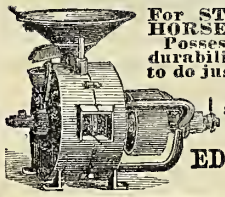

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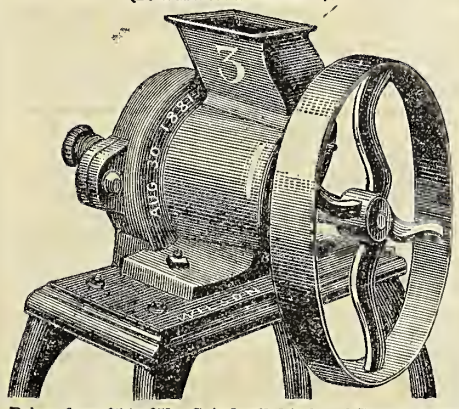

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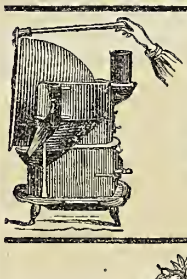

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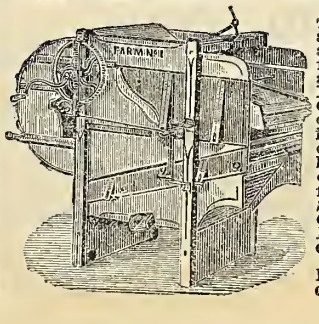

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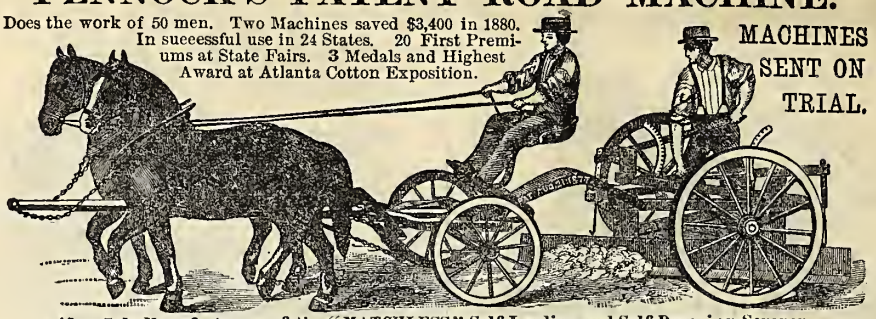

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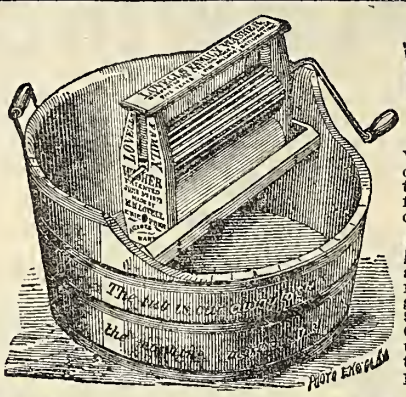

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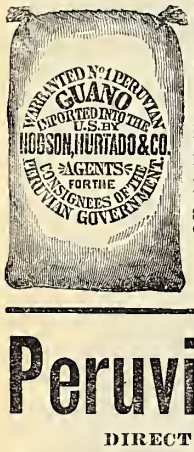

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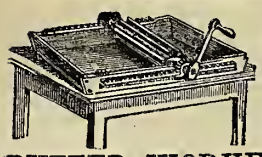

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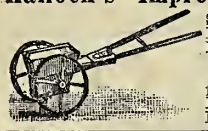

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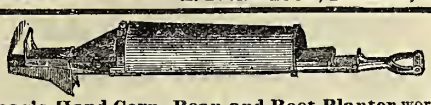

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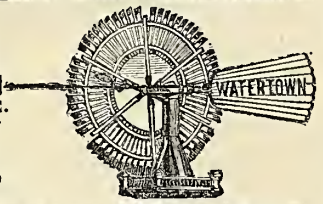

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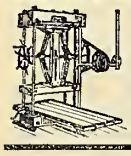

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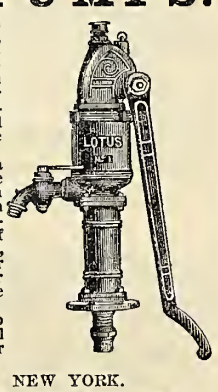

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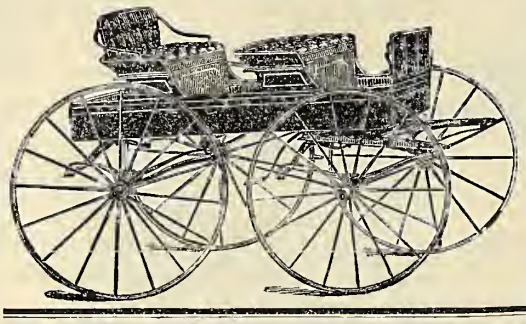

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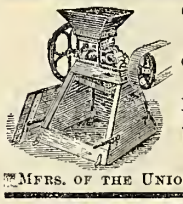

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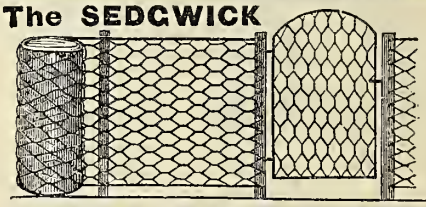

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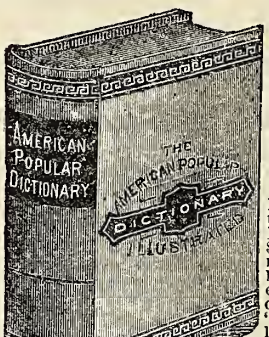

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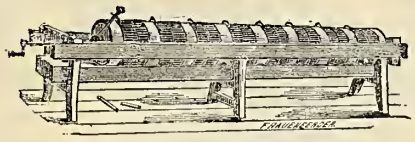

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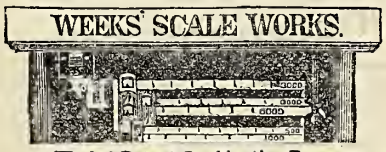

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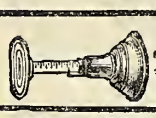

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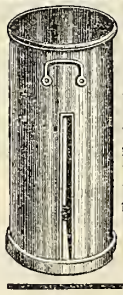

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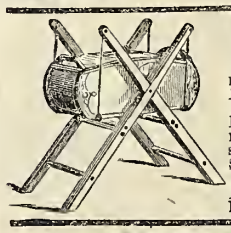

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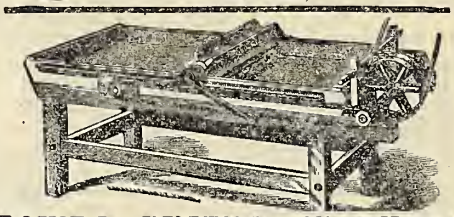

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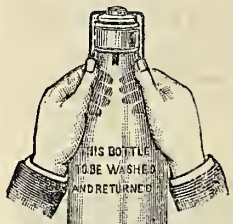

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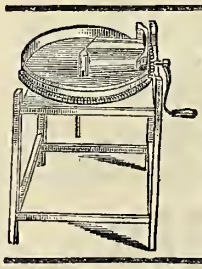

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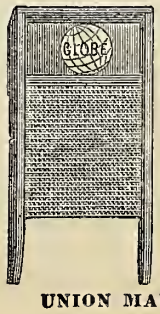

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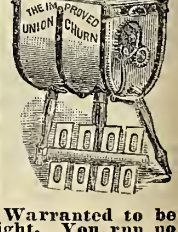

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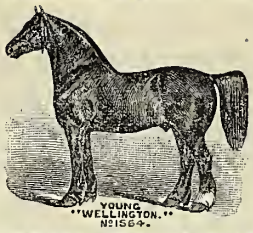

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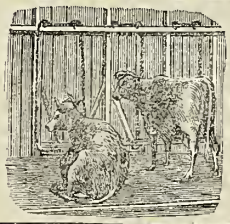

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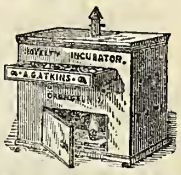

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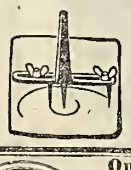

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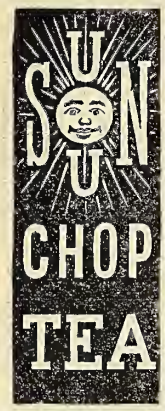

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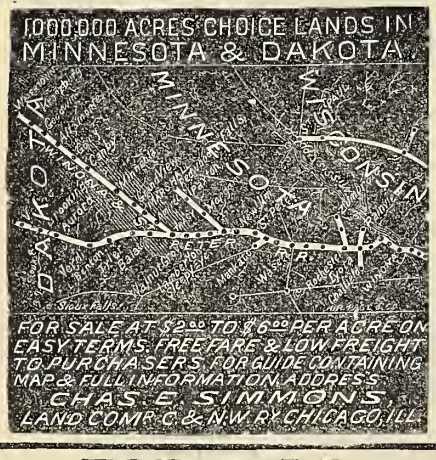

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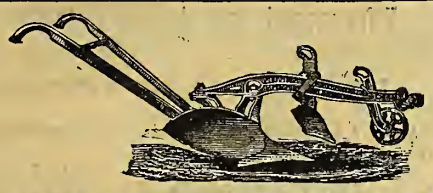

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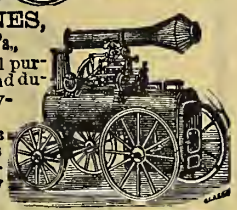

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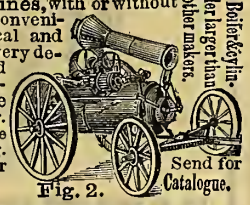

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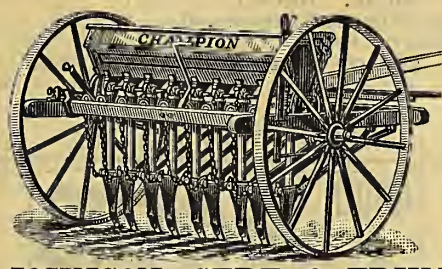

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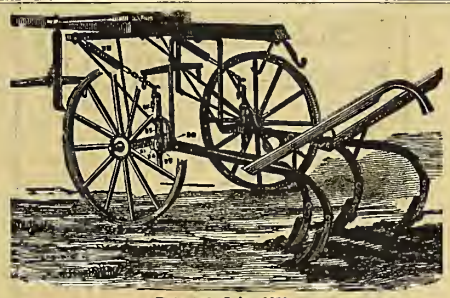

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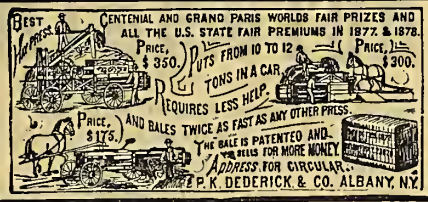

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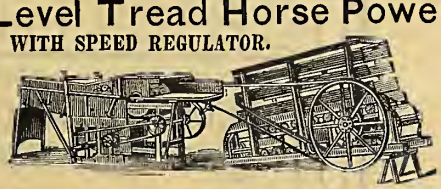

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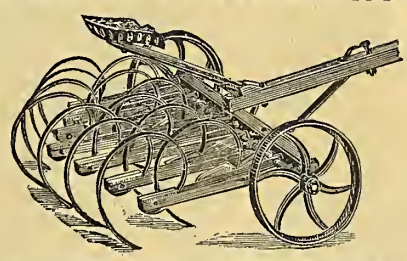

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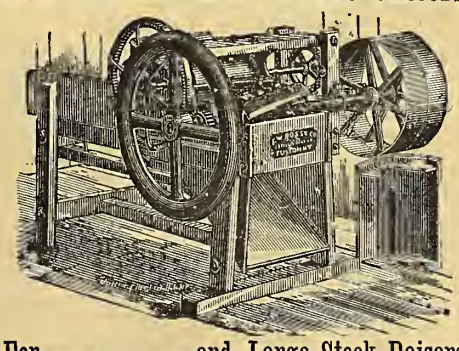

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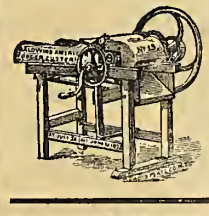

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Insurance Company
OF NEW YORK.

F. S. WINSTON, President.

For the Year ending December 31st, 1881.

Income during Year 1881.

From Premiums	$12,196,624 62
" Interest and Rents	5,051,491 74
Total Income	$17,248,116 36

Disbursements during Year 1881.

For Death-claims	$4,460,205 91
" Matured Endowments	1,905,167 58
" Annuities	24,094 80
" Dividends	2,947,395 85
" Surrendered Policies	3,303,247 98
" Commissions	774,032 88
" Contingent Guarantee Account	204,564 35
" Taxes and Assessments	346,709 27
" Expenses	792,525 07
Total Disbursements	$14,757,943 69
Total Claims paid during the year	$6,365,373 49
Total paid Policy-holders during the year	12,640,112 12

Assets, January 1st, 1882.

Mortgages on Real Estate	$47,565,849 23
United States and other Bonds	13,222,030 00
Loans on Collaterals	16,615,000 00
Real Estate	7,302,749 01
Cash in Banks	1,792,015 73
Interest Accrued	1,223,017 64
Deferred Premium	883,958 55
Premiums in Transit	93,337 76
Total Assets	$94,702,957 92

Liabilities, January 1st, 1882.

Reserve at four per cent	$89,371,651 00
Death-claims not yet due	815,785 36
Premiums paid in advance	19,364 78
Agents' Balances	3,773 74
Surplus and Contingent Guarantee Fund	4,492,383 04
Total Liabilities	$94,702,957 92

Surplus, January 1st, 1882.

By Company's standard	$4,492,383 04
" Massachusetts State standard	6,621,968 04
" New York State standard	12,206,450 04

Insurance in force January 1st, 1882, 101,490 Policies, insuring $315,900,137.

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Reserve for Unearned Premiums,	1,943,733 00
Reserve for Unpaid Losses,	215 595 36
Net Surplus,	1,806,180 90
CASH ASSETS,	$6,995,509 26

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APRIL, 1882.

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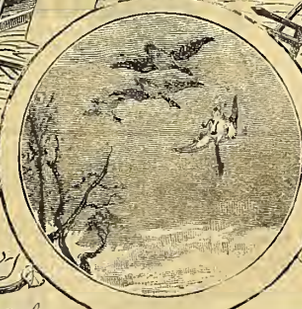

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Extract from the AMERICAN AGRICULTURIST, February, page 75, 1882.

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Some samples are worth rather more and some a little less, but the average is as above stated. It is hut proper to add that the results obtained by the tobacco growers in Connecticut, the growers of asparagus, cauliflower and other "truck" on Long Island, and the potato and wheat farmers of New Jersey, all show that the plants find in the fertilizers the valuc indicated hy the chemists."

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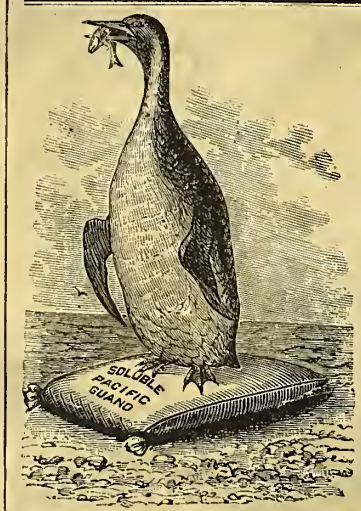

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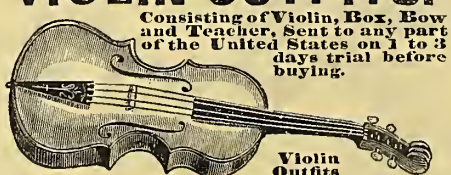

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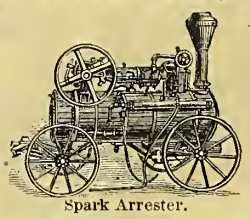

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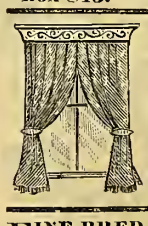

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AMERICAN AGRICULTURIST

For the Farm, Garden, and Household.

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VOLUME XLI.—No. 4. NEW YORK, APRIL, 1882. NEW SERIES—No. 423.

THE TROUT BROOK IN APRIL.—*Designed and Engraved for the American Agriculturist.*

After the long dreary winter has passed, and the March floods have subsided, the brooks that were swollen and muddy, become clear and flow with a more quiet current. At this time the trout fisher, and the country boy alike, are in their glory. The country youth, with a handful of earthworms, a lithe sapling, a few yards of line, and two or three hooks, seeks the brook-side, and casts his baited hook gently upon the water, near the side of some moss-grown boulder. He slyly works the bait to the base of the rock, where, to the uninitiated, no signs of fish appear. The lad knows better—as a rush, a tug, and a flash of a speckled beauty in the air attests.

The fly angler, scorning this simple mode of fishing, prepares, with care and skill, the gaudy or the sombre-colored fly, as may best, in his experience or judgment, lure the coveted game to his hook. Arriving at the brook, the fisherman carefully adjusts his rod and reel, and attaches the flies (a number of which he carries in his hat-band) and adroitly casts his line; avoiding a too near approach to the stream, the flies are skillfully dropped upon the water, as if brushed from some overhanging bough. The wary fish is deceived, and darts from its hiding place beneath some log or boulder, or out of a hole in the bank; it gorges the hook and is "played," and landed with all the grace that becomes a skillful angler.

The old adage of the trout fisherman: "If you want to see the fish, don't let the fish see you," appears to be fully understood by the fisherman depicted in the engraving. Observe how cautiously he moves himself to the edges of the great slippery rock, that no shadow or sight of him may disturb the well-fed, gamy fish that may lurk in the quiet pool, and which, if captured by a superior skill, will render the catcher as well as caught, objects of admiration to the fellow fishermen. No more agreeable day can be passed by the sportsman than in fishing in "The Trout Brook in April." A few years ago it seemed that trout-fishing could only be enjoyed by those who could afford to visit those parts of the country that still remain as a "Wilderness." Thanks to the efforts of the U. S. Fish Commissioners of the several States, many of the exhausted streams have been abundantly restocked with trout. If the taking of the fish is restricted by judicious laws, there seems no doubt that trout-fishing, regarded as the highest form of the angler's sport, may be within reach of all who care to indulge in it. Besides this it will add largely to the food supplies of the country.

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☞ The Publishers' Special Announcements on pages 172 and 173, are Unusually Interesting this month, and will attract Immediate Attention.

AMERICAN AGRICULTURIST.

NEW YORK, APRIL, 1882.

Suggestions for the Season.

"Well Begun .... Half Done,"

is true of most kinds of farm work. Previously well considered plans, and a good ready, with seed, implements, teams, harness, etc, so as to strike right into the work in hand, are large elements of success. We know some farmers who are always complaining of "had luck," poor soil, unfavorable seasons, etc. We have seen them start from the breakfast table at 6½ to 7 o'clock, and frequently the sun climbs half up the meridian before the teams and other working apparatus, are all got together, and then, very often there is a missing link, or bolt, or screw.—Thinking, planning, arranging beforehand, taking time by the forelock, are just as important to the tillers of the soil, as to the man in any other business. Active spring work is upon us, or close at hand; be all ready to strike the most effective blows at the very start: "Well begun—half done."

A "Diagnosis" of the Crops.

The first thing a physician does when called to a patient, is to make a careful "diagnosis" of the case, that is, to examine all sources and causes of the ailment, its manifestations, etc., and then decide what is to be done. Every one having a field of wheat, rye, grass—of any crop in the ground over winter—should now make a diagnosis of the condition of every part of each field. If the growing crop of grain or grass is good in every part, that will be a satisfaction. If any fields, or parts of fields make a sickly or stunted show, the trouble most likely comes from one of two causes:—the plants may have "wet feet," or they may be starving. In the former case surgery is needed; in the latter, food, or medicine in the form of stimulants, that is a top-dressing of fertilizers. See the two items on "Making Land Dry," and "Top Dressing."

Feeding Plants at the Surface—Top-Dressing.

If the "diagnosis," referred to above, shows that if winter grains, meadows, pastures or lawns need artificial food, or stimulants, we must resort to top-dressing, since we can not now disturb the soil. Well-rotted yard-manure scattered finely over growing grain and grass, uniformly, or more on poorer portions and less on vigorous portions, so as to even off the field, will always tell well, especially if this be done in time for the rains to wash the manure into the soil. It may be done at any time while the grass or grain plants are small, but the earlier the better, so as to receive more washing-in showers. Guano has a similar effect, but being caustic it should be finely divided and well scattered, and if possible be applied just before a coming rain. The same of unleached ashes, or German potash salts. The amount of manure per acre, or of guano (50 to 200 lbs. per acre), will depend upon the wants of the soil, and the available supply of fertilizers. Of ashes, use 20 to 40 bushels per acre, as needed. A mixture of guano with fine bone-dust, or superphosphate and potash salts, is a good top-dressing for grain or grass, especially the former: 100 lbs. to 250 lbs. per acre, according to the poverty of the soil. Some leading manufacturers prepare and advertise special mixtures for different crops. Application of any of the above top-dressings on any but the richest soil, will generally bring back far more than the cost the first season, and contribute much to the future fertility of the soil.—The caution needed is, avoid killing grain or grass plants with caustic manures.

Crops Suffer from "Wet Feet."

Next to lack of nourishment (plant food), in the soil, both grain and grass, and other cultivated crops, in field and garden, trees and flowers included, all suffer from standing in soils that hold too much water. Spade a hole a foot deep, and if it contains water four days after a rainfall, plants in that soil will suffer more or less from "wet feet." Water standing in the soil keeps it cold and clammy; it prevents the entrance of air to act upon the elements contained, and fit them for plant food; it often keeps iron salts in a poisonous form. Let all dead furrows and their outlets be carefully cleaned now with spade or hoe. An hour's work of this kind may add twenty to forty bushels or more to the yield of a field. If any soil, in a whole field, or in any part of it, is wet from holding its own catch of rain, or from water flowing or soaking from a higher to lower levels, and it is not underdrained, it is best to run deep double or triple plowed furrows through it, down the grade, to carry off excess of water in rainy weeks, and then at harvest run the mowers and reapers parallel with these open ditches.

Where and How to Apply Fertilizers.

It is often difficult to decide—for barn-yard or stable manures, or for any artificial fertilizer—whether to put it in the hill or broadcast it; and whether to apply it on the surface, or bury it deeply. Here is a hint or two. If not strong enough to injure the first tender roots, a little manure near at hand gives the plant a good send off, like nourishing food to the young calf or other animal; the aftergrowth is much better if the young animal or plant is not dwarfed by imperfect and insufficient diet. Therefore, drilling innocuous hand fertilizers in with the seed is useful, as is putting some well-rotted manure or leached ashes into hills of corn, potatoes, indeed with all planted seeds.—But there are good reasons for distributing most of the manures or fertilizers *all through the soil*, and as deeply as the plant roots can possibly penetrate. The growth and vigor of all plants or crops depend chiefly upon a good supply of strong roots that stretch out far, and thus gather food over the widest extent of soil. If a flourishing stalk of corn, grain, or grass, be carefully washed, so as to leave all its roots or rootlets attached, there will be found a wonderful mass of hundreds and even thousands of roots to any plant, and they extend off a long distance, frequently several feet—the farther the better, to collect more food and moisture. Put some manure or fertilizer in place two feet away from a corn or potato hill, or from almost any plant, and a large mass of roots will go out in that direction. So if we mix manures or fertilizers well through the whole soil, they attract these food-seeking roots to a greater distance; and they thus come in contact with more of the food already in the soil, and find more moisture in dry weather. A deeply stirred soil, with manure at the bottom, develops water-pumping roots below the reach of any ordinary drouth, and the crops keep right on growing—all the more rapidly on account of the helpful sun's rays that would scorch a plant not reaching a deep reservoir of moisture.

A Crop of Roots.

MANGELS AND SUGAR BEETS are most valuable as a farm crop. For these the ground needs to be prepared this month. A loose friable soil is best suited to mangels, but they can be grown with profit in all good farming soils. All root crops require deep culture that the roots may meet with no obstruction to their downward growth. If the soil is new and rich, no fertilizer will be needed, otherwise manure should be applied. Nothing is better than thoroughly rotted stable manure, but if this is not at hand use bone dust, superphosphate or guano, sown on the surface, and after plowing, harrowed in. The rows should be far enough apart to admit of horse cultivation, or from 24 to 30 inches, the plants being thinned to 8 inches in the rows. The best time to sow mangels in the latitude of New York is from May 1st to the 15th, before corn is planted. Among the best varieties are "Webb's

Mammoth" (red), and "North" and "Kinver's Globe," both yellow sorts.

TURNIPS—A similar soil and treatment are required for turnips. The Swedes or Ruta Bagas should be sown from the end of May until the last of June, and the strap-leaved sorts from July 1st to the middle of August.

CARROTS require well prepared land; they are sown from the beginning to the end of May, in rows two feet apart, and the plants thinned to six inches. The "Long Orange" variety is among the best. One strong offset to root crops has been the lack of proper winter storage, but now cellars and pits are easily provided and this should not deter any from making roots a part of the regular rotation of crops.

Spring Wheat.

This first field crop to be sown in spring, should go into the ground as early as thorough and proper working of the ground will permit. The "thorough and proper working" of the soil means a good deal. The plowing should not be done when the furrow slices of sticky soil shine as they are turned, lest it afterwards dry into hard clods. Plowing the soil before it will crumble as turned is a serious mistake. Besides having a mellow soil, it should be naturally rich enough to grow at least 20 bushels per acre, or else enough manure used to secure this. Much time and strength are wasted in plowing and harvesting wheat which an application of manure would make profitable. This remark holds good in other parts of the farm than the wheat field.

Seeding to Clover.

Our best success has been in scattering the seed over growing wheat, on a cool morning early in April, when an inch depth of frost opens the ground in cracks into which the seed falls and is lightly covered by the thawing earth. Both this and the wheat, but especially the clover, are usually benefited by a broadcast sowing of ground plaster in May. So marked is this sometimes, that one can write his name in large letters with plaster sowing, and the letters will be distinctly visible in the more luxurious green, when the clover plants, at first protected from the sun by the wheat plants, have a chance for full growth, after the wheat is cut. The experience of many who raise much clover is, that a good catch is most certain, if the seed is not sown until the soil is warm and mellow. The clover starts into growth at once and strong plants are quickly obtained. The chief danger of delay is that the still feebly rooted plants may be caught by dry, hot weather and killed. While plaster is a good top-dressing for clover on most soils, if one's own experience or that of his near neighbors does not indicate this, other light top-dressings may be useful—some soluble fertilizer, as superphosphate or muriate of potash. Clover responds to any attentions of this kind, and makes a good return in the mass of foliage and rich material it gathers from the soil and air—material that, when plowed in, richly prepares the soil for other crops.

The Milch Cows.

Those to "come in" soon should be watched, and the udder bathed with cold water on the first appearance of heat or hardness. If any trouble with the udder occurs at calving, it is best to let the calf nurse—otherwise remove the offspring at once, and feed it by hand. The importance of raising calves from superior cows only can not be too strongly enforced. By a constant selection of the best the dairy may be greatly improved. It is not well to turn the cattle out to grass at the first appearance of green in the pastures. The change from dry hay to green food should be a gradual one.

Take Good Care of the Horses.

If at work, they need a regular allowance of grain. If worked hard, ten quarts of ground corn and oats mixed will not be too much. The hay may be cut and moistened, and the feed mixed with it. Such a ration is not over bulky, and contains sufficient nourishment to keep a working horse in good trim. At this season the coat begins to loosen, and the skin is irritable. When much so, it may be corrected by giving daily, for a week, an ounce of equal parts of Sulphur and Cream of Tartar. Good grooming with soft brush and blunt curry-comb is decidedly useful. Everything about the stable should be kept neat and clean, as the warm weather approaches. Turn brood mares loose into a box stall as foaling time approaches. They should receive gentle treatment, as this is likely to influence the disposition of the colt.

Save and Care for the Pigs.

For many years past no spring season has found so few swine in the country in proportion to the coming wants. Owing to the scarcity and high price of corn, and the demand for hog products at figures far above average years, the last hog, grown and half grown, that could be got into anything near a fit condition to be slaughtered, has been sent to market. It is reported that a good many breeding sows have gone into the barrel and lard pans. This being the case, with the probability that the markets of this country and elsewhere will be cleared up and nearly bare of pork, bacon, hams, and lard before next winter, makes it important to look well after the pigs; to see that not one is lost for want of care and protection until warm settled weather arrives; also to give the young porkers a good start and continuous vigorous growth by liberal feeding; also to do all that can be done to multiply the number. The foreign demand for hog products is always large, and 10 lbs. of corn, when converted into 1 lb. of pork or lard, is transported at one-tenth the cost.

The Sheep.

As a good rule, it is safest to have lambs dropped after the weather is warm and settled in May. But the constantly growing demand for "Spring lamb" in all cities and large villages, and the high price paid for it has led many farmers to provide extra conveniences, warm yards, etc., and have lambs dropped as early as March, and even in February. The extra care required is usually fully repaid by the higher prices obtained. If the ewes dropping the early lambs are to be sold for mutton, it is best to push them forward by good feeding to be ready for the butcher in June; and the same of wethers designed for market. The carrying and growth of a heavy fleece make extra feeding necessary to their being in good flesh immediately after shearing. If the warmer weather produces many ticks, the sheep may need a dip in tobacco water, or in one of the "dips" sold by trustworthy dealers.

Sundry Seasonable Hints.

SWINE, despite their reputation, are clean animals, and flourish best in clean pens. Give them pens large enough, and they will of their own accord leave droppings by themselves, and not in all parts of the pen. Let breeding sows have "nests" of chaff or very finely cut straw. A board or any timber projecting 8 or 10 inches from the side of the pen, 6 or 8 inches up from the floor or ground, will prevent the pigs from being crushed to death against the enclosure when the sow lies down. Generous feed to the dam, adds to the nourishing milk for the litter, and gives them a good start. See item on "Saving Pigs" above.

POULTRY repay any corn given them. Layers must have material to make eggs out of—some meat or meat scraps are needed until they can find plenty of insects; sitting hens need clean nests. A spring white-washing of the whole interior of the poultry-house, and the roosts and nest boxes, is of great advantage. Supply the softest hay or straw in nests, and if infested by vermin, cleanse with kerosene or crude petroleum.

MACHINERY of all kinds used upon the farm should be inspected and all repairs made before the time for spring work begins. An hour spent in mending in March saves a more valuable hour in the busy months that follow.

The First Thing to Do Now,

And the very first, if not already attented to, is to secure all the SEED, wanted or likely to be wanted, before midsummer, for the field, or the garden, or flower bed. The plowing, and the harrowing, and the cultivating will be labor lost if there is not enough GOOD seed. If on the average only three vigorous stalks of any crop grow well where four might grow, that is, a loss of 25 per cent, as other work and expenses are the same for a full crop as for a 75 per cent one; and this lost 25 per cent is where the real profit comes in, because 50 to 75 per cent of almost all crops is eaten up by the expenses. If one seed out of four is not healthful enough to send up the most *vigorous* plant, it helps the 25 per cent loss.—If one has all needed seed, let it be immediately tested, as noted on page 158, or by the simpler process noted on page 150, which was written before receiving Mr. Tracy's article. If any seed is to be bought, order it now, not only to test it in time, as there is much poor seed this year, but especially because seed dealers will soon all be overcrowded with orders, and many will run out of the best quality of perhaps just the seed one may want. If uncertain where to get seed, turn to the advertising pages, and send at once for the catalogues of one or more dealers. The cards of a large number of the best seed dealers throughout the country will be found; we admit no one we would not buy of ourselves. Finally, no one is now living so remote, that he can not get pretty good sized lots of seed by mail, at small expense. One cent an ounce pays the carriage 4,000 miles or more, if there be any point that far distant from any other point.

What is to be done in the Orchard?

The hints given on page 93 last month, are for the most part equally applicable now. On many farms there are old trees, the fruit of which is only fit for the pigs, that by grafting would in a few years be productive of excellent fruit. There is nothing about grafting that a man or a boy who can use a jack-knife without cutting his fingers, can not perform. There is no secret about it, though those travelling grafters who go about the country, would make one think so. The various works on fruit culture describe the operation; those who have the back volumes will find it described in April, 1877, and that number can be purchased separately at this office. Grafts can be had by mail from any of the leading nurseries. Having the stock (the old tree), and the grafts, the work may be done without other tools than those at hand. The wound must be covered with grafting wax, directions for making which are given in the books and in the paper referred to. If any branches of fruit-trees have been broken by storms or the weight of snow, saw off the stub that may be left close to the trunk or to the branch from which it starts, and cover the wound with paint, unless grafting wax is at hand. There are many places about the farm, especially near the barns and out-buildings where a fruit tree may be planted; such a tree may often be of use in affording shade to the poultry-house, ice-house, or dairy building, and at the same time afford acceptable fruit. Peach trees may occupy such places. See article elsewhere on fruit culture.

Grape Vines and Currant Bushes.

There is not a farm on this broad continent upon which there might not be an abundance of grapes or, except in the extreme South, currants in plenty. By "abundance" and "plenty" we do not mean a dish at dessert now and then, but as many as are desired three times a day and all that the children want when they are hungry between meals. Weeds occupy the fence rows, just where vines might grow, and if the cost of trellises is an item of importance, there are on every farm, sheds and other buildings against which many vines can be trained. Pruning is the great bug-bear. Nothing is simpler, when once explained, than the proper pruning

of a grape vine. Our present object is to get the vines planted—the pruning we will look out for later. If it is not desired to make a small vineyard, then take advantage of whatever affords a support. The sides of barns, sheds, and other out-buildings, fences, the back stoop of the house, and even the front veranda, if not occupied by ornamental climbers. Wherever there is room, plant a vine every 8 feet. "What shall we plant?" will, of course, be asked. When the question was put to us at random twenty years ago, we answered "Concord;" and now, if we must answer without reference to any particular locality, we must say "Concord." As we cultivate some fifty or sixty varieties, we are well aware that there are many better grapes. We are also well aware that there is no one of the lot that may be set down anywhere and be so sure to give fruit as the "Concord." We advise the inexperienced, whatever others they may plant, to let a share of their vines be "Concord." When we come to others, there is a long list. The Southern States have their peculiar varieties, which do better there than any others. "Wilder," "Barry," "Delaware," "Creveling," and where it succeeds, the "Catawba," are all old sorts and good. The newer ones are so many that we must refer to the catalogues. Whatever the variety, at planting, cut back the stem so as to leave but three buds; when the shoots from these have fairly started, break off all but the strongest one and keep this, as it grows, tied to a stake 5 or 6 feet high. If it grows taller than the stake, let it go as it will. Currants are so acceptable in hot weather and so useful for jelly, that one is not likely to have too many. Plant them 6 feet apart, not against a fence, but where they can be reached on all sides, and allow three or four main stems to grow. The "Versailles" and "White Grape" are among the best; the new "Fay's Prolific" very promising.

Make an Asparagus Bed.

Asparagus is as easily raised as anything that grows in the garden, and yet it is comparatively rare to find it upon the farmer's table. The reason may be that much nonsense has been published about the difficulties of raising it, and that we have to wait two or three years for the full maturity of the plant. It is true that a full crop will not be given in less than three years, but when the bed is once made, the job is done for a dozen or twenty years. If made this spring, there will be one year the less to wait. Any good well-drained soil that will bear corn is suitable for Asparagus. Put in a half-cord of manure for every four square rods of ground. Work it in thoroughly. Set out one-year-old plants, in rows four feet apart, and two feet in the row. They can be kept clean then with the harrow or cultivator. It should have cultivation once in two weeks, through the growing season. Cover the bed with manure in the fall, and fork it under in the spring. Cultivate thoroughly through the second season and top-dress as before. The second season a few stalks may be cut in April and May, but there should be no close cutting until the third year, and this should not be continued later than the middle of June. The plants must have time to grow, and recuperate in midsummer, or the bed will soon fail. The secret of large fine Asparagus is abundant manure, applied in the fall every season, thorough cultivation until the tops prevent, and stopping the cutting by the middle of June. The blanched Asparagus that is so popular in some markets, is secured by covering the beds with sea-weed, straw, or other mulch. It is poor stuff in comparison with the long, green, tender shoots that have had the full benefit of the sunlight on a rich soil. The leading varieties are the "Colossal" and "Defiance," and are advertised by the seedsmen and other dealers each spring.

English Beans.

Several very distinct plants are in cultivation under the name of Bean. The English, or Broad Bean, the Common Garden or Kidney Bean, the Lima and the Asparagus Beans, belonging not only to different species, but to three different genera.

THE ENGLISH BEAN (*Faba*) differs from the common kinds, not only in the erect growth of the plant, and the large size and shape of the seeds, but in being very hardy. While the common kinds are exceedingly tender, this is not injured by frost, and endures cold much better than heat. In this country they are seldom grown, save by those who have been accustomed to them abroad. Our seedsmen keep a few varieties, of which "Early Mazagan" is the earliest. Plant at the earliest possible time in spring, dropping the seeds four inches apart, in drills, and covering two inches deep, or by dibbling them in singly. When the lower pods begin to set, the top of the plant is to be pinched out. Hot weather soon stops their growth, and the plants are apt to be infested by a black louse.

Beets For the Garden.

Those who only know the long late "Blood Beet," have yet to learn the difference in beets. As soon as any part of the garden can be worked, a sowing of early beets should be made. Select a light soil if possible, and manure it well; make the rows a foot apart, sow the seed thickly, at least 2 inches deep, and press down the soil firmly with a light roller, or pat it down with the hoe. The earliest varieties are the "Egyptian," and "Blood Turnip." The "Bassano" is not quite so early, or so fine grained, though good. The thick sowing is advised in order to have a plenty of young beets at thinning; when two or three inches high, thin to 4 to 6 inches in the row, saving those that are pulled out to be used as "greens." Many prefer them even to spinach. It is well to sow seed for a succession, once in two weeks up to July. The "Blood Turnip" is so much superior to any of the large beets, that we prefer it for winter use. For this purpose the seed should not be sown before the middle of June, else they will grow stringy.

Cauliflower, Broccoli, and Brussels Sprouts.

Except the cauliflower, these relatives of the cabbage are little known in this country, and that is seldom grown except by regular gardeners. Success depends upon good seed and rich land. The treatment is in all respects that mentioned for cabbages. As with cabbages there are early and late sorts. Early kinds can only now be had by procuring plants; the late varieties may be sown when the late cabbage seed is put in. We have had good results from "Nonpariel" and "Algiers." "Vietch's Autumn Giant," a new variety, is highly recommended by a friend who has tried it.

Broccoli, so popular in England, is rare with us. In general appearance it is like the cauliflower, but is sometimes purple; it is more hardy, but is regarded as somewhat less delicate. Cultivation in all respects the same. The "White" and "Purple Cape," and "Walcheren," are the principal sorts.

Brussels Sprouts, may be described as a tall cabbage stump, thickly studded with little Savoy cabbages, the size of pullet's eggs, and with a small crown of leaves at the top. These little cabbages are the part eaten, though the top leaves, after they have been frozen, are edible. In taste Brussels sprouts closely resemble Savoy cabbages, and as a much larger supply of Savoys may be raised from the same space, it is not worth while to grow the sprouts, save as a curious variety. The sowing and culture is in all respects like late cabbages.

Cabbages, Early and Late.

Very early cabbages are rarely met with in the farm-garden. Market gardeners and others who raise the earliest, grow the plants by sowing the seed in September, and keeping them in a dormant condition through the winter by setting them closely in a cold-frame. These are advertised by seedsmen as "Cold Frame Cabbage Plants," and may usually be had at any time during the present month. Those who wish the earliest cabbages, if they have not raised plants in a hot-bed, can purchase them. They should have very rich soil, be set in rows two feet apart, with the plants every 18 inches in the row, and have frequent hoeing. If early plants can not be obtained, the next best thing is to sow seeds of some early variety, in a well-prepared bed in the open ground, and as soon as the plants are large enough, set them out as above. Numerous varieties are given in the catalogues and one is puzzled what to select. For general use there is none better than the "Early Winningstadt." There are earlier kinds, but for good size, hardiness, and reliability, especially in not very rich soil, the general testimony is in its favor. It may be sown later as a winter cabbage, but some larger variety is preferred for keeping. For family use, the Savoy cabbages are superior to all others, as they have a marrow-like richness not found in the Drumhead kinds. As a general thing, they are not so large as the others, but we advise those who have not tried them, to make a part of their sowing for winter of the Savoys. Near New York City, the seeds of late kinds are sown early in May, and the plants are set out about the middle of July. Among the Savoy's are the "American," and "Drumhead Savoy." Of the common kinds, "Flat Dutch" and "Bergen Drumhead" are favorites. Sometimes the so-called "Black Flea" appears in the seed-bed, and if not prevented, will make sad work. Sprinkling the plants with strong tobacco water, and then sifting slaked lime over them, is the best remedy.

Sowing Celery Seed.

Celery is often such an uncertain crop from the seed, that the majority of persons prefer to buy the plants they need, to taking the trouble to raise them. It was formerly considered necessary to start the seed in a hot-bed, but now it is always sown in the open ground. A piece of well-manured soil is carefully prepared, and marked off in drills 9 inches apart; the seed is sown thinly, and covered by rolling or patting the soil down with the back of the spade. As soon as the seeds break ground, a push-hoe should be run between the rows, and the plants kept clean from the start. There are several dwarf sorts, all of which are preferable to the tall kinds. *Celeriac*, or "Turnip-rooted" or "Knob Celery," the root of which is used in soups, and after boiling as a salad, is started in the same manner.

Early Cucumbers.

Those who have hot-beds or frames can sow cucumber seed, in these, after the plants are removed, and by covering at night and in cold days, greatly hasten the plants. Those who are without these, can forward the plants very much. Take a piece of good sod, lay it grass-side down upon a board, and cut it in 3 or 4-inch squares with a sharp spade or an old knife. Sow in the earth of each square half a dozen or more cucumber seeds, and place the board with the sods, in some warm place, under the shelter of a building or fence; provide another board to cover the sods. Expose during the day and cover in the afternoon before the day grows cool. When the plants appear, of course the cover must be raised by props of some kind; bricks are handy. When the plants are large enough, and the weather settled, place each square of sod in a well manured hill; make frames of 6-inch stuff, 12 or 15 inches square, a box without top or bottom, cover one end with millinet or mosquito net tacked on, and place one of these over each hill. This is the best way to keep off the striped bug. Should very cold nights occur, cover the tops of the boxes with shingles or any other handy stuff. It is not so much trouble as may be inferred from the description, and will greatly advance the cucumbers. Melons and summer squashes may be treated in the same manner as suggested for cucumbers.

Don't Neglect the Garden.

No part of the farm pays better than the land devoted to the garden, yet on no part is the work more grudgingly given. Often it will be true economy to have an acre or two less of wheat, or other field crop, and invest the labor that would have been given to these upon the garden. When farm-

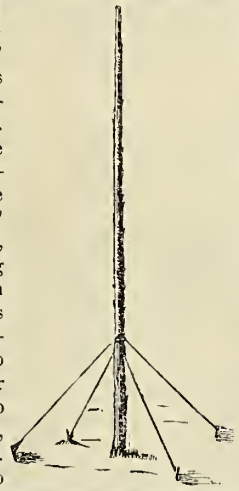
ers learn that a constant diet of corned beef and cabbage, varied by pork and beans—both excellent in their way—can be easily varied by many other, and not more costly forms of food, we shall hear less of the question: "How to keep boys on the farm?" and in other forms of food, we include an ample supply of fruits. See last month for suggestions on the Kitchen Garden, and the Fruit Garden, the hints under both heads (page 93) are generally timely this month. We call special attention to the distinction between hardy and tender plants, there given under "Kitchen and Market Garden," as an observance of this classification may be of service to the inexperienced.

Beans—Snap and Shell.

What are known with us as Beans—without prefix, are Kidney Beans in England, and Haricots in France. Whether dwarf, or bush, or pole sorts, they are varieties of *Phaseolus vulgaris*, of India, and are tropical in their relation to cold. Of late years, under the name of Wax Beans, a number of varieties have appeared in which the pod is without any tough lining, but becomes very fleshy and fills up the spaces between the seeds, which are smaller than in most others. Many prefer these to all other beans, while others find them lacking in flavor.

Dwarf or Bush Beans.—It is of no use to plant beans until the soil is warm enough to start them promptly. When danger of frost is over, make the rows two feet apart, and do not drop the seed too thickly. Four inches is near enough, and six inches is better for the large kinds. Beans should never be hoed or cultivated when the foliage is wet with dew or rain, as it causes rust. A dressing of plaster when the vines are half grown will often be of great service. The varieties are numerous. "Early Valentine" is one of the best for general use, as "snaps" or string-beans. "Fejee" is also good and prolific. Of the Wax sorts the "White" and "Golden" are favorites. For shelling green, perhaps none is better than the "White Marrow."

Pole or Running Varieties.—One of the oldest and most popular is the "Horticultural," also called "Speckled Cranberry" and "Wren's Egg"; it is used as a snap, but mainly for shelling green. Among the Wax-pole Beans are "Golden Butter," and "Algerian." The old "Dutch Case Knife" is a favorite with many, its large white seeds being used green or dry. In planting, set the poles first, putting them in firmly, with a crow-bar to make the holes, and four feet apart. Put four to six beans around the pole, about six inches from it. Sometimes the vines do not take readily to the pole, and may need a little help at first.—"A Subscriber," sends us a method by which one stout pole and four strings answer for four hills. The accompanying engraving, made from a sketch sent shows this economical arrangement.



Lima Beans are quite different from the foregoing, being another species (*Phaseolus lunatus*), and the pod, however young, is never edible. They always require poles, and need still warmer soil than the others. In planting, push the seeds into the soil singly, with the fingers, with the "eye" downward. Should a cold, wet storm come on before they are up, it will be well to dig up a few of the seeds, and if they have begun to rot, replant at once. The "Large Lima" is more generally planted, save in far northern localities. "Dreer's Lima" is more prolific but a little later. For localities where the season is too short for these, the "Small Lima," called "Carolina," "Sieva," and "Sewee," is more certain, but has not the marrow-like character of the others.

Unusual Beans.—The "Asparagus," or "Yard-long" Bean, a species of *Dolichos*, with pods two feet or more long, is grown as a curiosity, and is a very good "snap" if taken young. The "Scarlet Runner" (*Phaseolus multiflorus*) is more often cultivated for ornament than as food. The seeds are edible, and as the species is perennial, in Europe the roots are sometimes taken up and stored through the winter and set out again in the spring.

Greens, Wild and Cultivated.

In spring nearly every one likes what our forefathers called "pot herbs," and are classed by us as "greens." A large number of wild plants, from Dandelion and Marsh Marigold (called Cowslips, erroneously), to Nettles and Pokeweed, are made to do service in different parts of the country. While several wild plants are very acceptable, none equal Spinach, and some others. The time expended in gathering these scattered plants, if devoted to sowing a few rows of spinach, would give more satisfaction, and the greens be at hand when wanted. Spinach is hardy, own brother to the beet; if in fairly rich soil it may be used from the time it is large enough to thin, up to the showing of the flower-stalk. Sow in rows, like beets, 12 inches apart; when large enough to be crowded, thin out a portion for use; repeat the thinning two or three times, leaving the last plants 6 or 8 inches apart, and these should be used before the seedstalk begins to run up. The first sowing may be among the earliest in the garden and again every two weeks until the end of May. Sown later than this it runs to seed too soon. For midsummer, the New Zealand Spinach is an excellent substitute. Do not sow until the soil is well warmed, in May, drop the seeds 6 inches apart in the drill, and when up, thin to a foot apart. The plant spreads and the rows should be two feet apart. The excellence of young beets is mentioned elsewhere. Some persons sow beet seed expressly to use the young plants for greens.

Long Rows in the Garden.

Works on gardening give plans for laying out the ground—certain beds to be put in one place, with paths here and there. This is all well in order to make the most of a small piece of ground. With the farmer's garden the case is different, as there are few farms where a square rod or two more or less in the garden is of importance. In such a garden there should be very few beds, but all the larger vegetables should be placed in long, straight rows, in order that the working may be done, so far as practicable, with the horse cultivator. The permanent beds, such as those of rhubarb, and asparagus, should be near one another and at one side of the land to be occupied by the annual crops. In sowing or planting it, the cultivator used upon the farm is also to do work in the garden; this is to be borne in mind in laying out the rows, which should be at such distances as will allow of the passage of the implement. In going to or coming from farm work, the cultivator may often take a few turns in the garden. Those who have never tried horse-power in the garden, will be surprised at the great help it is in keeping it in proper order, and it will go far to do away with the complaint that the garden "takes too much time."

Horseradish.

Horseradish is more frequently tolerated than cultivated on the farm. It is often found occupying some odd corner, making a slovenly weedy patch, from which a few pieces are taken as wanted in the spring. When left to itself it takes such thorough possession of the soil that it is difficult to get rid of it. The only way to keep it under control is, to plant the roots, let them grow one season and then dig the whole up. If left longer it will make trouble, and the roots will not be so good. Sets, are the small side roots, about 6 inches long, and half an inch or less in diameter. They are made when trimming the roots for use or for market; as they must be planted right end up, the top part is cut off square and the lower end with a slant. In this shape they are sold at the seed stores, but enough for the home garden may be dug from any accessible patch. Market gardeners plant them between the rows of early cabbages; if they start before the cabbages are mature, the tops are cut off in hoeing; when the cabbages are removed the horseradish is allowed to grow. In the family garden a small planting may be made without reference to the cabbage or other crops, planting the sets 18 inches apart each way, with a sharp pointed dibble, having the tops of the set 3 inches below the surface. Be sure and take up the roots, large and small, in autumn or early next spring.

Lettuce and other Salads.

It is very common to see lettuce sown quite thickly, and when the young plants are three or four inches high, they are pulled for the table. While this is better than no lettuce, it is so much inferior to that properly grown, and allowed room to develop so as to head, that we advise those who have never transplanted it to make the experiment. The seeds can be sown in a sheltered bed, or in a box (see page 95, last month), which may be covered or put under shelter on a cold night. When the plants are large enough to handle, set them about a foot apart. As the excellence of lettuce depends upon rapid growth, it should have a very rich soil, and frequent hoeing. Sowings made every two weeks, until July, will give a succession. During the hot months it soon runs to seed. The varieties are numerous, the "Curled Simpson" is one of the earliest, but does not make a solid head. "Tennis Ball" and "Butter," head well and are fine. "Hanson" is a large kind and one of the best.—Many like Cress or Pepper-grass with their lettuce. It is sown thickly in rows, and cut while young and tender. Mustard is sometimes sown to be used in a similar manner when very small.

More Green Peas, if you Please.

If there is any body who does not enjoy good green peas in abundance, we have never met him—or her. We have them from May to August, fresh picked daily, of uniform growth, for a single ripening pod injures the flavor of the whole; and from August to May, we have the canned "La Favorita" variety, which, as we get it, is next door to the fresh garden picked. It is little trouble now to grow one's own peas, early, medium, and late varieties. Given a fair soil, with some *well* rotted manure, if it is needed, and our programme runs thus: Just as soon as the snow is off and deep freezing not expected, and the ground dry enough to work at all, in go the peas, even if the first heads starting do get a frost nip—peas will stand that. We plant some "Improved Daniel O'Rourke," and some "Alpha;" also some of the "American Wonder," and some "Champion of England," all on the same day. The first-named is comparatively poor, but cooked in milk with a trifle of sugar added, it goes very well—far better than none. The "Daniel O'Rourke" is early and prolific, but needs a little brush as it grows 3-feet stalks. By the time the O'Rourke and Alpha are eaten, in comes the American Wonder, and a wonder it is for its prolificness, dwarf stems, no brush needed, and its superior eating quality—the only very early dwarf wrinkled pea, and "wrinkled" applied to peas is almost synonymous with good quality (see page 183 last month). By the time these go, along comes the king pea, "Champion of England." There are others like it, claimed to be better; this is good enough for us, and seed is abundant and cheap almost everywhere now. But after the first sowing, and for two weeks, new sowings of the Wonder and Champion should be made every 4 or 5 days, to keep up a constant succession. After two weeks or so, follow with very frequent sowings of the Champion, or if without brush, the Wonder, so as to have a daily supply far into summer. As fast as the peas are off, other crops, as cabbage, turnips, etc., may occupy the ground. Always save enough of the earliest and best pods to ripen for next year's seed.

Sow such medium-growing kinds as Daniel O'Rourke in rows 2½ apart; the Wonder, rows 12 to 15

inches apart; "Champion," 3 feet apart, and provide plenty of brush, or some kind of trellis, for it, 3 to 4 feet high. Cover peas 2 to 3 inches deep.

Vegetables Not Generally Grown.

There are a number of vegetables much esteemed by some, that do not seem to have made their way into the farm garden.

Kohl-Rabi is one of these. It has been called "Turnip-cabbage." It is like a small cabbage with a globular stem; it is of easy culture, and if taken when young, is much superior to early turnips. If left until too old, it is very stringy. When rapidly grown it is edible when 4 inches through, but 2 or 3 inches is the usual size. It is to be sown like beets, and thinned to 6 or 8 inches.

Leeks are much valued by many in soups and stews. They are hardy, and may be sown early in rich soil; when 4 or 5 inches high, thin to 6 inches in the row, handling carefully, and transplant the thinnings to other rows at the same distance.

Cardoon is a tall, thistle-like plant, the thick leaf-stalks of which are blanched and stewed. It is rarely seen in this country, but is highly esteemed by those who have lived in Europe.

Sorrel, quite different from the wild plants known by the name. Its leaves are somewhat like those of a Dock. It is pleasantly acid, and is cooked either by itself or mixed with spinach.

Salsify or "Vegetable Oyster,"

Is a very good thing to have. It stands any amount of freezing, and comes out perfect in spring, just when one wants some succulent root for a change from potatoes. Dug, washed clean, and scraped, and boiled soft, it eats well. A few bits of salt codfish added, make it resemble cooked oysters, in some people's imagination; hence its common name. It grows very much like carrots, and is to be treated similarly. Sow in drills 15 inches apart, in April; thin to 3 inches, keep the weeds down during summer; and leave it until wanted in spring, but it may be drawn upon at any time when not frozen in solid. Some prefer the Scorzonera, or Black Salsify, but the common white seems of equally good quality, and it looks better on the dish. We always want a 15 or 20-foot row of it for each member of the household.

Helps in the Garden.

There are several appliances that will help the work and save time in the garden, and no where are these more needed than in the farm-garden, as the lack of time is the common excuse for not having a good garden.

A GARDEN LINE is of great use in marking the rows straight, in laying out beds, etc. The line should be long enough to reach the length of the garden, and not larger than a fourth of an inch. It will last longer if tarred. Reels for holding the line are sold at the implement stores, but these, while handy, are not necessary. Take two hard-wood pins, 18 or 20 inches long, an inch or so thick, and pointed at one end. Tie an end of the line to the middle of each and wind up the line, a half on each pin, as boys wind a kite string. By setting the pins firmly in the ground, the line may be stretched very quickly and afford a guide in sowing and planting, etc.

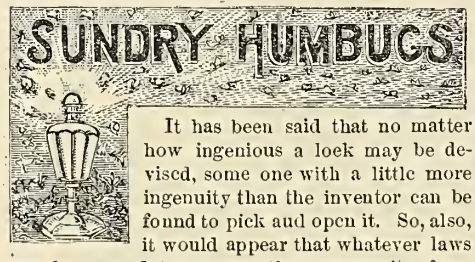
MARKERS, to mark several rows at once are great time-savers. They are made like a large rake, with a piece of scantling for the head and wooden teeth, about a foot long, with a blunt, triangular point below. Two sets of teeth may be put on opposite sides of the head (inserting them in holes), one set at 12 and the other at 15 inches apart. By using every mark, or every alternate one, distances of 12, 15, 24, and 30 inches may be made with this one implement. The handle should be well braced.

OTHER MEASURES.—It is well to have the handles of the hoes and rakes marked with feet and half feet by notches, or brass or tinned tacks.

THE TRIANGULAR HOE.—This is rarely to be found on sale, but a blacksmith can easily make it. The blade is a triangle, 2 inches across the head and the sides 4 inches long, with a shank by which to attach it to the handle. Made of good steel and kept sharp it will do astonishing work among weeds.

THE STEEL RAKE, one with long, sharp teeth, not too close, will do rapid execution where weeds are small; its frequent use will avoid much hoeing.

A SEED SOWER.—There are several excellent machines which can be easily changed to sow seeds of different sizes. Some of these are provided with weeding attachments and may be quickly converted into hand cultivators. An implement of this kind is needed on the farm, where roots are raised, and will be found a great saving of time in sowing seeds in the garden.



It has been said that no matter how ingenious a lock may be devised, some one with a little more ingenuity than the inventor can be found to pick and open it. So, also, it would appear that whatever laws may be passed to protect the community from fraud, the swindlers are ingenious enough to find means to evade them.

Take the Lottery, for Example.

While a majority of the States prohibited lotteries by law, a few tolerated them, and the managers took up their residence in these and carried on their business through the mails. When Congress passed a law prohibiting the use of the mails for all fraudulent purposes, it was supposed that an end was made of the lottery. But the managers were equal to the occasion. They had only to move across the border into Canada, and buy postage stamps bearing the head of Queen Victoria instead of George Washington, and thus continue their business as before. St. Stephens, New Brunswick, and Halifax, N. S., are the present headquarters of lotteries, though they are called "Distributions" of some kind. Of course the authorities know whether a British stamp will allow a letter to be delivered in defiance of our own laws, but the fact that such letters pass by thousands through the United States mails and are delivered at our Post Offices, is well known. The circulars are full of appeals to "try your luck," and hold as among the inducements to do so, the secrecy with which the transactions are conducted.

Offering Counterfeit Money.

This is an old swindle that dies hard. We say "offering," for, as we have shown several times, there is no *selling*—indeed, there is no money in the operation other than the good money out of which the victims are swindled. As the lottery depends upon that element in human nature which induces persons to "try their luck," so this counterfeit game depends upon a too common desire to get something for nothing, and appeals to those who do not consider whether the means are right or wrong. These schemes, which a few years ago might be counted by scores, are still kept up, though in much smaller numbers than formerly, and with more caution than then.

Under Cover of the Book Trade

is now carried on one of the latest counterfeit money schemes. Bargains in books can be advertised without exciting suspicion, and when catalogues are sent for, they allow the sender to be approached with the following, which one of our friends in Missouri received in a catalogue:

No. — —— STREET, NEW YORK.

"DEAR SIR:—A short time ago I forwarded to you my Circular of Books. Now, to be frank with you, I do not think there is a chance for you to make much money with that class of goods, as there are so many engaged in that business, but I have something that will enable you to make money, and a plenty of it, in a short time. I have

The United States Chromos,

the best in the market, at $15 per 100. I will send 30 U. S. C.'s as samples on receipt of $5. In every case where goods are ordered C. O. D., one-third of the amount must be sent with the order; the goods will then be shipped C. O. D., the balance, not less than 100, shipped C. O. D. Yours truly,

C. L.

"If you think well of the above, order at once."

But our Missouri friend did not "think well" of it. Still it is a neater form of the swindle than that of the old style of insisting that the purchaser shall come to the city and stop at a certain hotel, etc....

The Success of Land Swindles.

The desire to own land is a commendable one, and is especially strong in those who have come from European countries where it is difficult to become a landowner. The success of land swindles depends upon this common desire, for if the scheme is an attractive one, offering ownership of land for a small outlay, it makes little difference what the land, or where it may be located, it is quite sure to be profitable to its projectors for a while, until exposed. One of the most flourishing of these schemes was that started in Cincinnati, a few years ago, offering lands in a wonderful Texas town; this went on with a rush, until we published the statement of parties living in the vicinity of the alleged place, that there was no town there.

"Farms at $3 Each"

are advertised by a Washington concern. It is not stated where they are located, but they are advertised by the "Orphan's Manufacturing Company." Perhaps they manufacture orphans by sending parents to $3-farms, situated no where in particular. A very funny advertisement is that of a paper which offers a

House Lot in Florida

to every subscriber who sends a dollar for the paper. As this does not start in Cincinnati, but in a New England city, we have no reason to doubt that the subscriber will get his house-lot; and so much the worse for him. A scheme need not be actually fraudulent to be a humbug. The offer of a "lot of land 40 feet front and 100 feet deep," in Florida, is claimed to be a "wonderful, grand, and princely offer," but when it is examined it appears very ridiculous. The State, its climate and its orange groves are glowingly described, though the township or county in which one's lot is to be situated can not be known, except it is stated that the lots are to be given away "in rotation," which is perhaps as good as naming any more definite locality. The lots are "40 feet front," but what they "front" on is a mystery. Unless in a city or village a lot of that size would be of no more use to its owner in Florida than in Alaska or in the moon. If one wishes to subscribe to the journal he is not obliged to take the land: if he chooses, he can be let off according to the advertisement by agreeing to take 100 chromos.

The "Ozone" Business Reorganized.

That Cincinnati Co. send out circulars informing those who receive them that their advertising has brought such an "avalanche of business" that they must "reorganize their methods." Their first step in reorganization should be to stop calling a mixture of sulphur and lampblack "ozone," a name which, thus applied, does violence to chemistry and truth. But the "Co." will "reorganize" by establishing an "agency" in each State, the "agent" to pay them a "royalty of 5 cents per pound." As the stuff does not cost 5 cents per pound, that seems a large price to pay for the privilege of mixing the materials. We would reply here to all who inquire about this stuff advertised as "Ozone," that it it is only a revival of the old method of

Preserving with Sulphurous Acid,

which is obtained by burning sulphur. Whatever this so-called "Ozone" will do, can be done by sulphur under its proper name and bought at the ordinary price. It has been used for ages to prevent fermentation in wine, but its unpleasant odor and taste prevent its having a wide application in preserving articles of food.

Seed Swindles.

For a long while we have missed the announcement of those wonderful seeds which come every spring from one or two small towns in Tennessee,

but this year we have something similar from Georgia. The corn advertised is truly called "Giant," for it is stated that "the grains are as

Large as the Average Size Chestnut."

More than that, the ears "are of very large size," as they ought to be to carry such kernels; besides, they average "three to six ears to the stalk"—on the principle that one "can't have too much of a good thing." But the most remarkable thing about this corn is that it is "perfectly hardy." After this we do not need to be told that it is "a new and distinct variety"—yes, very "distinct." The same concern also offers the seed of watermelons, which average 75 to 125 pounds each. As they will "grow in any section of the country," they must be as hardy as the corn.

Wonderful Fruits and Flowers

usually put in their appearance this month. We again remind our friends that no plant of any real value is introduced by peddlers or travelling salesmen. No matter what representations are made as to the superior quality of a grape or other fruit, don't buy it of these chaps, of whom you know nothing except what they say of themselves. Whatever is worth planting may be had of reliable dealers. Believe no stories of unusual things, no matter how beautiful the pictures that illustrate them, or how glib the tongue of the one who offers them. "Self-pruning grapevines," strawberries that grow upon "bushes," peaches made hardy by "budding on the French willow," are among the impossible things offered in some part of the country every spring.

One Word to Farmers,

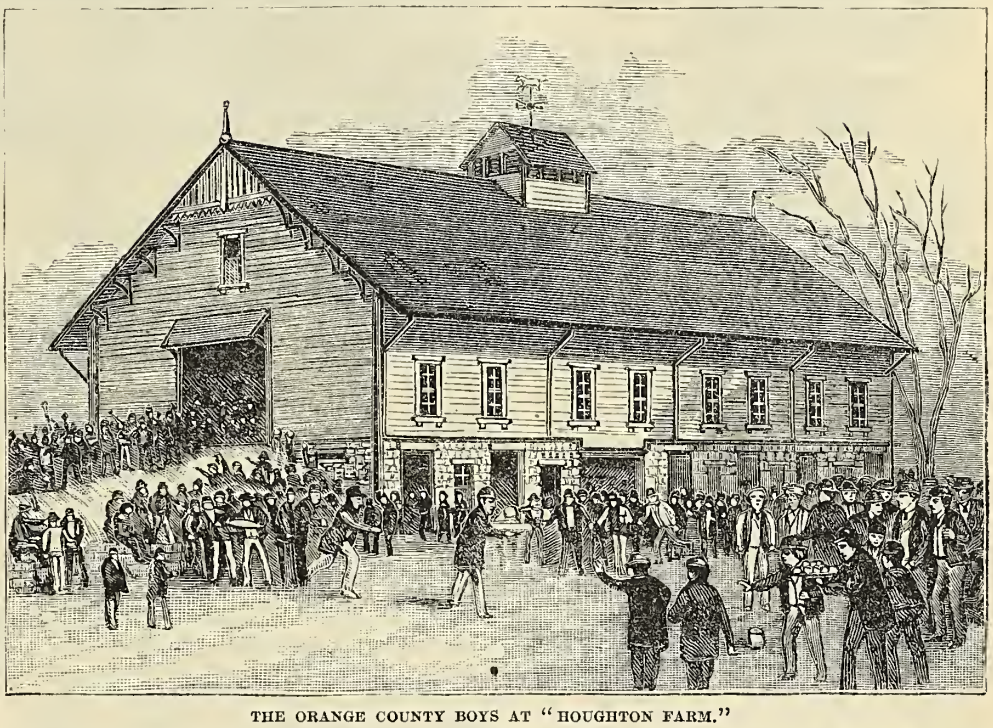
especially those who have recently become our readers. This busy month is one of those chosen by swindlers to endeavor to get the farmer's signature by some method, as mentioned in February last. Do not allow the press and hurry of work, or the desire to be rid of the stranger, induce you to *sign* any paper whatever. No matter how large the promised profit, do not accept the agency for any implement, as trouble will surely follow. Grinders for the knives of mowing-machines, and spring-bottom mattresses, still appear to be favorite articles of which these fellows offer the agency, but they deal in other wares at times.

"The Boys' Day" at "Houghton Farm."

Five hundred boys and young men visited "Houghton Farm," Mountainville, Orange Co., N. Y., on February 22d, in response to an invitation extended to them by its proprietor, Mr. Lawson Valentine, to "come and celebrate the 150th anniversary of the birth-day of George Washington." The day was a bright one, both meteorologically and socially, and being a novel event in American farm life we give the Reception somewhat in detail. The invitation was extended to the boys of Orange County by neatly printed programmes and through the local press. The young guests upon their arrival were met by a reception committee, consisting of the farm pupils, young men who work for their board and lodging for the privilege of learning the improved methods of conducting farm operations. The time until 11 o'clock was spent in inspecting the live stock and the various farm buildings, including the experimental feeding stalls, the silo, dairy, etc.—the large barn being the central point of attraction. At 11 o'clock an "opening address" was given by Major H. E. Alvord, general manager of the farm, upon "Washington's Birth-day." Washington's love for farm life was made prominent, and his familiar words that: "Agriculture is the most healthful, most useful, and most noble employment of man," were enforced upon the minds of the youthful listeners. A letter was read from Mr. Valentine, in which he said that the spirit of "Houghton Farm" meant hope for the true farmer's calling. He wished the boys would "carry away, for their own practical use and benefit, such facts as they can, from our failures as much and as well as from our successes."

The boys were next treated to an "object lesson" by Dr. M. Miles, director of the farm experiments. As the lecture room will seat about a hundred persons, the patient Doctor found it necessary to give his lecture, or "lesson," five times. The room was darkened, and a large number of fine stereopticon views of various farm animals were shown upon a large canvas. This was one of the most impressive features of the programme. Though it dealt with important points in stock breeding, everything was so plain that the youngest lads—those of twelve years of age, were instructed as well as very much entertained.

A lunch was served in and around the main barn at one o'clock, and it was a decidedly, forcible illustration of: "What appetites boys do have!" But there was some excuse for a scrambling for the sandwiches and coffee, and crackers and cheese, when it is remembered that many of the boys had started early and driven many miles to visit "the Farm" and join in the "celebration."



THE ORANGE COUNTY BOYS AT "HOUGHTON FARM."

The afternoon was devoted to a continuation of the "object lesson," and a discussion which was held on the floor of the large barn. Major Alvord conducted the meeting, and a number of the young men and even boys, hardly fifteen years old, took an active part in the speaking. Various questions in farm practice were brought up and disposed of with remarkable rapidity and satisfaction. The best of feeling prevailed. Some of the younger lads found considerable amusement in sliding and tumbling in the hay mow, but none went away without some good things to think about. Before the close of the meeting, five premiums were announced "for the best crops of Indian corn, raised on plots of land of one fourth of an acre, namely, $25, $20, $15, $10, and $5. Competition is open to any boy in Orange Co., N. Y., who shall be less than 18 years of age on the 1st of May, 1881." To this a number of conditions were given, all of which if carried out will do any boy good whether he wins a prize or not.

The celebration was voted by every one as a success; one small lad when asked how he liked it replied in language more forcible than elegant: "It was perfectly e-mense (immense)!"

It seems to us that Mr. Valentine has done for the boys of Orange Co., what may be carried out by others simularly situated in many other counties in the State, and in every State of the Union. The boys now upon the farms are to own and manage the farms in the next generation, and a day devoted to their improvement in some such way as was the 22nd of February at "Houghton Farm," is worthy of general imitation.

The Canker Worm in Missouri.—"J. B. J." Bates Co., states that the canker worm has appeared there and is on the increase. He has an orchard of 1,200 trees just coming into bearing; he fears that they will be stripped of their leaves the coming season, and asks if he shall buy a sprinkler and throw a poisonous liquid into the trees. Our friend is perhaps not aware of the habits of this insect. The male only flies; the female has no wings and can only reach the top of the tree by crawling up the trunk. The insects come out of the ground, where they have wintered, very early in spring; the female lays her eggs on the branches, gluing them together, and these hatch when the leaves of the tree appear and afford food for the young worms. As each female lays from 60 to 100 eggs, it is evidently easier to dispose of her than to kill that number of worms by poison, especially if those are scattered all over the tree. The insect, which was formerly a serious pest in the Eastern States, must be prevented from going up the trunk by some barrier that the female can not pass. Many devices have been invented, and each year brings new ones, but the cheapest and most effective, is a band of stiff brown paper around the trunk which is smeared with pine tar or with printer's ink. It will be a task to treat 1,200 trees in this manner, but vastly less so than to poison the tops of that number. The paper should fit so snugly that no insects can crawl under, and should be put on very early. Make it the business of some one, during the time of their coming, which lasts about three weeks, to see that the tar or ink is renewed if need be, and that dust or dead insects do not form a bridge upon which living insects can pass over. If all in a neighborhood will persevere in this treatment, the insects may be subdued. Should a large number succeed in getting into the tree, then Paris Green may be used to kill them.

The Newer Strawberries.—"C. S. H." We cannot say "which is the best of the newer varieties of strawberries," for the very reason that they are new. Wishing to extend a bed, we last fall planted it with "Bidwell" and "Seneca Queen." The "Bidwell" last season seemed to have every good quality of hardiness and productiveness, for which the "Wilson" has been valued, and is a vastly better fruit. We sent many out as premiums, and have had no cause to regret doing so. We planted the "Seneca Queen" on account of what we saw of it on Mr. Roe's grounds. To wonderful productiveness and good size it joins high quality. The "Primo" is a new kind highly commended and the "Manchester" is a new variety that had its origin in a poorer soil than it is ever likely to be planted in anywhere else. We look upon all these as of excellent promise, and worthy of trial.

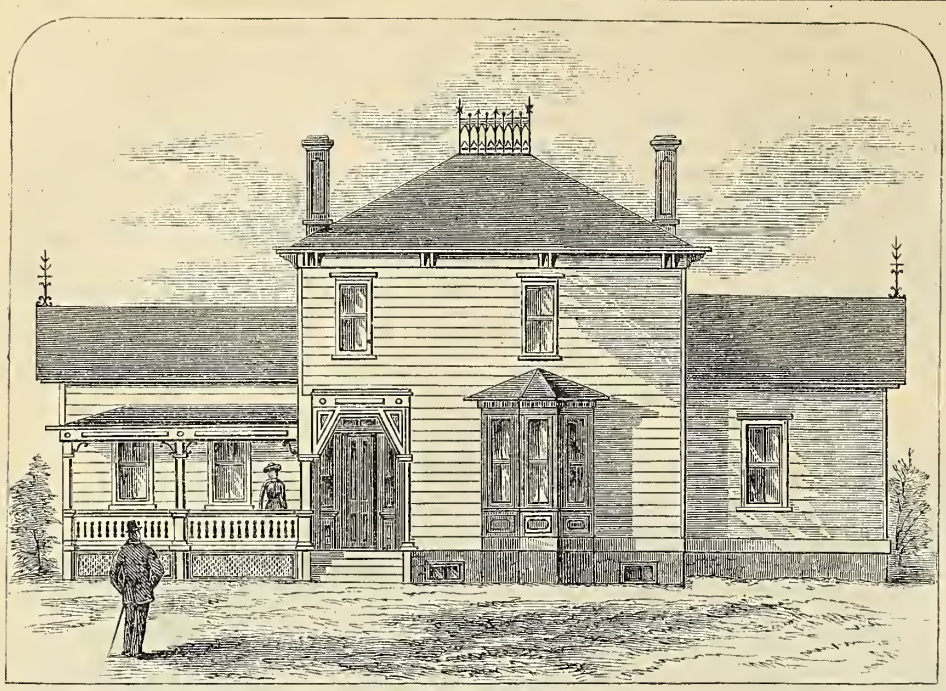


Fig. 1.—FRONT VIEW.

Country House, Costing $1,600 to $2,000.

(Cost as Here Shown and Described, $1,900).

CLASS II.—FIRST PRIZE—BY A. C. SWARTZ, GIRARD, KAN.

The envelope "motto" that came with this plan was, "Housekeeper's Delight," and three features Mr. Swartz aimed at will please housekeepers, viz.—First, to have the Living or Sitting Room located near the center, and convenient to all other parts of the house;—Second, to have the Kitchen and Dining Room so connected as to save steps;—Third, to have floors of all carpeted rooms even yards, at least in one dimension.—Mr. S. excused his drawings (very good ones by the way), on the ground of being "a practical farmer and having to make them at night." He mentions incidentally that he made the first draft over a year ago, and this is the result of a full year's studying and thinking over it—a good way to get up any good thing.—The cost as here shown and described figures up $1,900. It is evident that by some changes and omissions (noted below in part), and by cheaper finish at first, the cost may be reduced to $1,600, or even to $1,500 where building materials are moderate in price; while a few extras, in more brackets and other trimmings, outside and inside, will easily raise the cost to $2,000 or even more.—

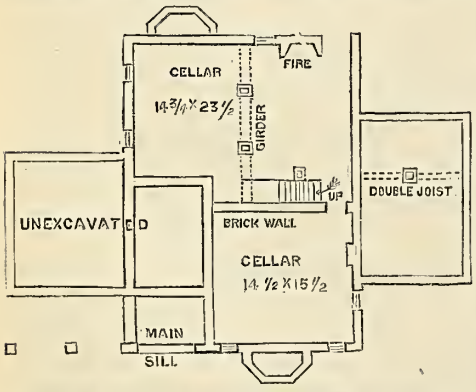


Fig. 3.—CELLAR PLAN (REDUCED SCALE).

In all plans given, our aim is to present those having general good features, but with the expectation that most house-keepers will wish to make some interior changes; and that competent builders will vary the outside ornamentation—often so as to decidedly improve the architectural features....The **Front Elevation** (fig. 1), and the **Side Elevation** (fig. 2), exhibit a fair looking exterior—better than the average house. The Bay Window in front, if made 9 feet wide, instead of 6, would show better we think, and materially enlarge the Sitting Room, allowing two or three persons to set their chairs within it for an outlook, while the expense would be but a trifle more, mainly for wider panes of glass. An architect suggests to us that as there is, or may be, a large side window in the Dining Room, the rear Bay Window might be omitted, and save its expense, unless the number to be accommodated at the table makes the elongation of the table room space desirable; or unless there be some unpleasant object in view from the side window, making it desirable to keep that window curtained over the lower sash.—But we always favor all the bay windows that can be got into a house without injuring its general appearance, or too greatly increasing the cost; they furnish more light, permit looking out in three directions, and enlarge the floor space proportionally more than the square feet of floor added. There is probably as much room in this house as would be needed by most families, but two large bedrooms or store rooms could be secured at small cost, by raising the wings—one or both—to nearly full hight. As the flooring, roofing, cornices, etc., would be the same, the extra cost would be only the floors, ceiling, and the walls of the added rooms, and the little additional timber and siding. This applies to all houses. On the prairies and other places exposed to hurricanes, it is usually thought necessary to keep buildings as low, and to give them as broad a base as possible. Mr. Swartz writes: "All outside walls to be sheathed on the inside of studding with boards having the heavy shiplap (*l*, fig. 6) and then lathed and plastered." The outside is covered with narrow clap-boards (*c*). For cold localities, a lining under these of tarred paper, or roofing paper, will add materially to the warmth of the house, and not greatly increase the expense. The saving of fuel will pay a large interest on the cost of such paper, and in a very few years fully cover it.

The Basement (fig. 3,—in reduced size). This is divided, by a brick wall, into the Cellar in front, and a rear room with fire-place, for butchery, soap making and other rough work in bad weather. It may be fitted for a laundry or washing-day room, but needs more window light if it is to be much used.—The cellar room may be ample, but the unexcavated space can be made available by a little more expense in continuing the foundation walls 3 or 4 feet lower and taking out the earth.

First Story (fig. 4) or Ground Plan. Hight 9 feet. The arrangements, divisions, etc., are plainly shown in the engraving, with the convenient connecting doors, etc. Mr. Swartz's description reads: "Closets and Cupboards on first floor: No. 1 (in dining room), lower part for table linen; upper part for table ware not in common use.—No. 2, Cook's kitchen wardrobe.—No. 3, china and service cupboard, with scullery below.—No. 4, for men's and boys' boots and rough clothes.—No. 5, bedroom closet, with shelves above and hooks under them.—No 6, may have drawers below.—PANTRY, furnished with shelves and flour and meal boxes.—BATH on first floor for special family use, with water pipes from range and cistern."—We think that, as there is a bath-room above, this lower one may be omitted, unless needed by an

Fig. 6. WALL SECTION.

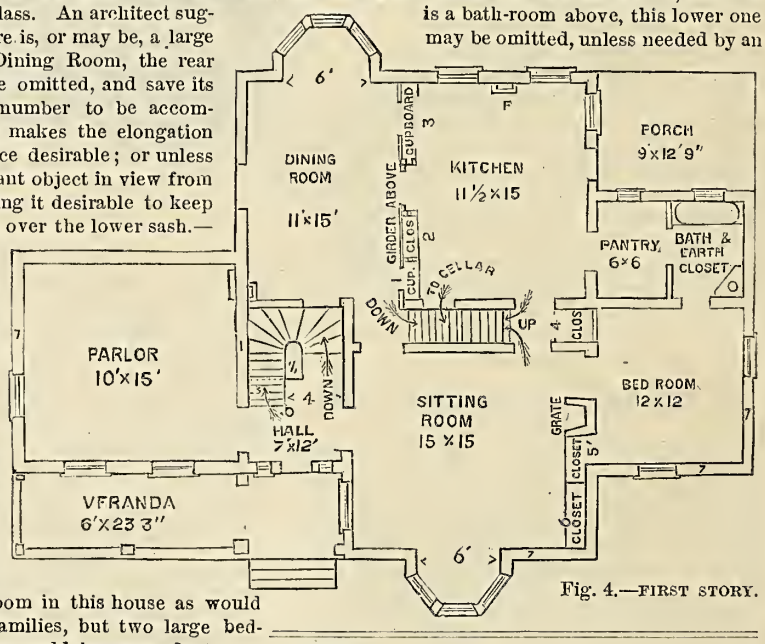


Fig. 4.—FIRST STORY.

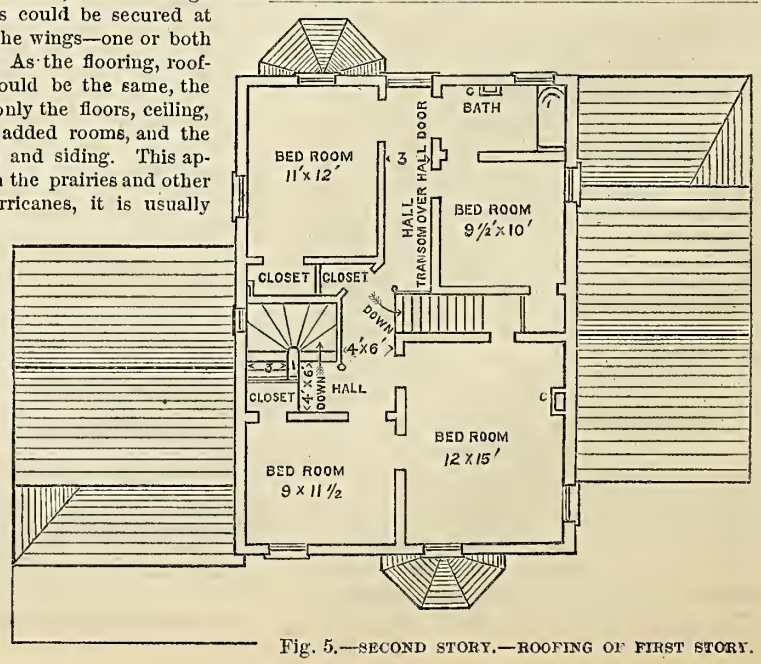


Fig. 5.—SECOND STORY.—ROOFING OF FIRST STORY.

invalid, and its space be in part added to the pantry, and in part to the bedroom as a closet, of which there can hardly be too many in any house. Besides, it is hardly appropriate to have such a room with its earth closet opening into the pantry. The PARLOR is rather small, but perhaps sufficient for all ordinary purposes. A foot or two larger, one or both ways, would not add greatly to the expense. There should be another window on the side or rear, as the two front windows are darkened by the verauda roof. It would be convenient to have the front windows extend down to the floor, but this would increase the expense. For a Physician, or Justice of the Peace, the first story bedroom might be used as an office, making a door of the front window, with steps—perhaps adding a veranda.

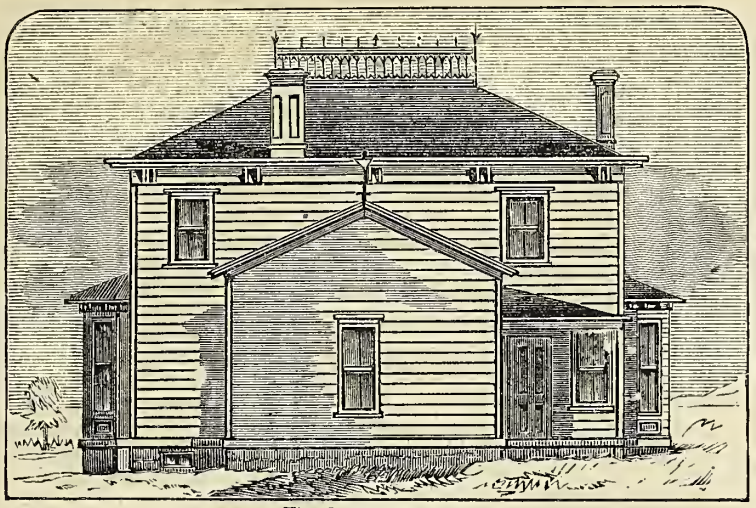


Fig. 2.—SIDE VIEW.

Second Story (fig. 5).—Hight, 8½ feet. The engraving shows the arrangement. The smaller

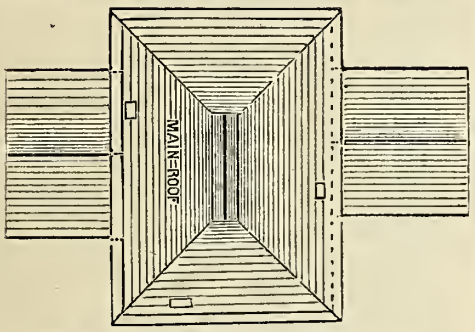


Fig. 7.—PLAN OF ROOF (REDUCED SCALE).

front bedroom might have 6 to 12 inches more room, taking it from the hall. There is no way to heat this room, but all others have chimney flues for stove-pipes; the one from the 11×12 bedroom will have to enter the chimney through the closet. "The HEATING throughout the house is by grates and stoves. The foul air escapes through ventilators, or perforated base, to the space between the sheating-boards and the siding, and thence to ventilators in the roof.—CONSTRUCTION:—The joists are to be strongly bridged; all work to be first-class of its kind. All work plain, except Parlor and Sitting Room." The materials described will show the character of the work. The prices named appear to be about the average through the country generally. Common labor is reckoned at $1 to $1.25 per day; skilled labor, $1.50 to $2.50. *

***Estimate of Materials and Cost.**

Sills, Girders, Posts.		*Outside Studs.*	
6 pieces, 6x8 in.x14 ft.,	336 ft.	3 pieces, 4x4 in.x20 ft.,	80 ft.
3 pieces, 6x8 in.x16 ft.,	192 ft.	4 pieces, 4x4 in.x12 ft.,	64 ft.
4 pieces, 6x8 in.x18 ft.,	288 ft.	57 pieces, 2x4 in.x20 ft.,	760 ft.
2 pieces, 6x8 in.x20 ft.,	160 ft.	6 pieces, 2x4 in.x16 ft.,	64 ft.
2 pieces, 8x8 in.x 6 ft.,	64 ft.	4 pieces, 2x4 in.x14 ft.,	37 ft.
1 piece, 8x8 in.x 8 ft.,	43 ft.	55 pieces, 2x4 in.x12 ft.,	440 ft.
1 piece, 6x6 in.x 6 ft.,	18 ft.		1,445 ft.
3 pieces, 4x4 in.x 8 ft.,	32 ft.		
	1,133 ft.	*Joists.*	
Rafters.		36 pieces, 2x8 in.x12 ft.,	576 ft.
4 pieces, 3x6 in.x20 ft.,	120 ft.	8 pieces, 2x8 in.x14 ft.,	149 ft.
2 pieces, 3x6 in.x18 ft.,	54 ft.	9 pieces, 2x8 in.x15 ft.,	180 ft.
14 pieces, 2x4 in.x10 ft.,	93 ft.	25 pieces, 2x8 in.x16 ft.,	533 ft.
34 pieces, 2x4 in.x12 ft.,	272 ft.	7 pieces, 2x8 in.x18 ft.,	168 ft.
48 pieces, 2x4 in.x16 ft.,	512 ft.		1,606 ft.
	1,051 ft.	*Ceiling Joists.*	
Stud Partitions.		40 pieces, 2x4 in.x12 ft.,	320 ft.
70 pieces, 2x4 in.x 9 ft.,	420 ft.	26 pieces, 2x4 in.x16 ft.,	277 ft.
60 pieces, 2x4 in.x10 ft.,	400 ft.	12 pieces, 2x4 in.x20 ft.,	160 ft.
	820 ft.		757 ft.

Total, 6,812 feet Board Measure, @ $22 per 1,000 ft.	$149.86
2,500 feet Flooring, @ $30 per M.	75.00
20,000 Shingles, @ $2.85 per M.	57.00
2,600 Siding, @ $22.00.	57.20
2,200 feet Ship-lap Sheathing, @ $22.00.	48.40
65 Shingle Lath, @ 8 cents.	5.20
1,400 feet of inch Boards, @ $30 per M.	42.00
550 feet of inch Boards, @ $20 per M.	11.00
4 Windows and Blinds, complete, @ $8.00.	32.00
13 Windows and Blinds, complete, @ $7.40.	96.20
3 Windows and Blinds, complete, @ $2.50.	7.50
2 Bay Windows (complete, except framing & roof)	50.00
6 Cellar Windows, @ $1.30.	7.80
Doors, complete: one Front, $18; nine @ $6 each; five @ $7 each; two @ $6.25 each; thirteen Closet Doors, @ $2.50 each.	152.00
Pantry, finished complete, $14; 2 Cupboards, do., $12.	26.00
Closet, Shelving, and Hooks.	13.90
Stairways: Main, $28; Rear, $10.50; Cellar, $4.	42.50
Plastering, 675 square yards, complete, @ 25 cents.	168.75
4,200 Bricks, laid, @ $11.50 per M.	48.30
1,540 feet Stone Work, @ 7 cents.	107.80
150 cubic yards of Excavation, @ 18 cents.	27.00
250 feet of Spouting, @ 10 cents.	25.00
Cresting and Finials.	30.00
Painting, $130; Nails, $30.	160.00
Range, Baths, and Fixtures.	110.00
Carting not included in above.	36.00
Carpenter Work not in above estimates.	275.00
Sundry Incidental Expenses.	38.59
Total Cost of Building complete.	$1,900.00

Produce Speculation Injuring the Country.

If left to their natural course, prices are fixed mainly by the relative supply and demand. But wealthy speculators, aided by a multitude of those whom they induced to follow their lead, undertook early last autumn to buy up and control the available supplies of grain, pork, bacon, and lard, and hold them at very high prices, prices quite above those prevailing abroad. They argued (to others) that there was a short supply in the world, and that before another harvest consumers would have to take their stock at any price they choose to ask. Some of them possibly believed this; others of these shrewd manipulators calculated that, however the markets might eventually turn out, *they* would themselves unload in time to make large profits, and leave the mass of their followers, the "lambs," to bear whatever losses might occur. And unfortunately they found plenty of these, many thousands of them in all ranks of society, who bit at the bait, and invested their five, ten, twenty, and up to hundreds or thousands of dollars in "margins."—What is the result? European countries which would have taken all our surplus, at paying figures, though below what speculators have held them at, have scoured the world, and drawn out from the remotest points far larger supplies than were ever before obtained, or would have been thought of but for the course of the speculators here. Take Great Britain for example. During five months ending Feb. 1, that country received the following supplies from three other countries alone, aside from that obtained from Australia, Egypt, Turkey, France, Chili, Canada, etc. (The flour is reduced to its equivalent of wheat.)

BUSHELS OF WHEAT.

From	1880.	1881.	1882.
British India	1,500,917	3,534,634	9,025,712
Russia	5,635,618	1,162,804	5,855,555
Germany	3,786,997	2,001,258	4,513,098
Total	10,923,532	6,697,696	19,394,365
United States	42,193,111	38,844,973	31,895,423

These figures show that Great Britain gathered nearly Thirteen Million bushels more of wheat from Germany, Russia, and India, than during the same period the previous year, and of this excess five and a half million bushels were brought from distant India. These Thirteen Million bushels have lain all the while in our store-houses and elevators, and would have been taken from us at good paying prices, and the cash returned, had gambling speculators not prevented it. And what is worse, not only have new sources of supply been opened, and larger production stimulated to compete with us in the future, but Great Britain has practically secured and within sight so large a stock that we are likely to lose this season the sale of much we have to spare. In proof of this, note that for the last five months, ending Feb. 1, there have been thrown into the British markets of home-grown and foreign wheat, the following amounts in pounds of wheat and flour, not including a small amount exported:

1882.	1881.	1880.	1879.
4,937,219,168	4,909,515,632	4,576,716,368	4,772,770,586

These figures show that up to February 1, Great Britain had already secured of wheat and flour for consumption, 27,703,536 lbs. more than at the same date last year; 360,502,800 lbs. more than in 1880; and 164,448,592 lbs. more than in 1879. Yet with this fact before us, with relatively larger stocks on hand here than at same date last year, the speculators would delude the public into believing that the present or higher prices will prevail; and they will keep this up until they inveigle enough "lambs" to take off their hands their enormous speculative holdings and contracts. What is said above of wheat and corn applies largely to other staples, and to hog products—lard, pork, and bacon.

The following figures show the injury to our country by the speculation which has kept prices of hog products unnaturally high, or always above what foreigners would freely pay for them, and thus overstocking our own markets, led to the export of gold instead of these products, and stopped the receipts of gold that would have come to us. Note these figures for seven Atlantic sea-bord ports:

Exports from Nov. 1, 1881, to Feb. 25, 1882.

	1880-1	1881-2	Decrease
Pork...	24,721,800 lbs.	21,198,200 lbs.	3,523,600 lbs.
Bacon..	328,356,470 lbs.	191,212,900 lbs.	137,143,570 lbs.
Lard...	144,844,571 lbs.	104,391,189 lbs.	40,453,382 lbs.
Total	497,922,841 lbs.	316,802,289 lbs.	181,120,552 lbs.

As against the evil effects of developing other competitors for the future, and the disturbance of the country by the locking up of such vast sums in speculative stocks and margins, which ought to have been circulating in regular channels of business, and the fact that to this date twelve million dollars of gold have gone abroad instead of the produce that should have gone, there is only one satisfaction, to wit:—All producers who have been able to get their grain and pork to market, have realized a little higher rates than they would have done had prices been left to take their natural course—though this single present gain is quite likely to be offset in the future by the great stimulus given to wheat culture in India, Australia, south-eastern Europe, northern Africa, and elsewhere, which will compete with us hereafter in the European markets; and our farmers are thus likely to lose in the end far more than they have gained by the great grain speculation of 1881-2.

COTTON.—Much that is said above applies equally to our great cotton staple, both as regards developed competition for the future, unnatural present prices, etc. While speculators maintain high rates by cornering the markets, keeping a firm grip upon stocks, etc., it is well to note the following figures showing the latest visible supply in this country, in ocean transport, in Great Britain, and at continental ports, reckoning bales at 450 lbs. each:—

1882.	1881.	1880.	1879.
1,405,847,250	1,316,767,050	1,133,776,300	1,170,942,300

Over 1881:—89,097,750 lbs.; 1880:—272,070,950; 1879:—234,904,950

If with the above statements and figures before them, the mass of smaller speculators, merchants, mechanics, professional men, clerks, and many farmers even, are disposed to continue buying and putting up margins to help out the leading speculators, they will well deserve the current title given them of "lambs." Those producers still holding their various products for higher prices, must be their own judges as to what course they shall pursue.

Important Experiments,

Which Every Farmer Can Profitably Make, and Should Make, this Year.

Making an exception of new fertile soils and those of inexhaustible native fertility, and leaving out of the question proper drainage and tillage, every intelligent farmer will agree to the following:

Since the cost of preparing soil, seeding, and cultivating, is as large per acre for a poor crop as a good one, it stands to reason that if any fertilizer will bring an increase of crop worth more than the fertilizer costs, it will pay to use it.

On almost all soils that have been in cultivation for a time, the right fertilizers, rightly used, will more than repay their cost in the increase of crop.

If one has, or can buy cheaply near home, all the good-yard manure he needs, that is enough.

Few farmers are thus supplied, for all the land they could cultivate. Abundant experience has proved that after all home manures are exhausted, there are some manufactured fertilizers that may be properly used either to piece out the manures and increase their value, or to use by themselves on other fields.

It has been settled beyond all question, that there are several elements or ingredients supplied by fertilizers which are useful for wheat, corn, grain, grasses, roots, and all other crops. Also, that all fertile soils contain these elements. Also, that cropping removes these elements of fertility, and that, as a rule, the needed soil elements which are likely to be soonest exhausted are PHOSPHORIC ACID, NITROGEN, and POTASH.

If a soil lacks, or is exhausted of, one fertilizing ingredient only, and we supply that element, we restore fertility. If two chief elements are exhausted, we must supply these two.

If we apply a "complete fertilizer," that is, one containing all these elements, we of course supply any one or more that is lacking. But if, for example, a soil lacks only one element, say potash, all the other elements supplied by the complete fertilizer are so much needless expense, and that fertilizer is not the most profitable one; indeed, it may be quite unprofitable. (If a man only wants a vest, costing $5, and, to get it, buys a $25 suit, the $20 for the coat and vest, which he does not need and can not use, is so much loss.)

On the contrary, if a soil lacks and needs two elements, say phosphoric acid and nitrogen, and the owner applies only potash, in a German potash salt, it is wasted, because the want is not met. If he apply only phosphate, the crop may still be poor, because the nitrogen is missing.

Now, then, we affirm that the progress in agricultural investigation renders it practicable for every farmer to easily and cheaply put a direct question to his own soils, and make them tell him what they lack in order to enable them to grow good crops of wheat, corn, oats, barley, potatoes, grass, etc., etc.

But no one can certainly tell what his soil does lack or what can be profitably added to it, without actual experiment. And it is costly and risky to apply fertilizers to a whole field at hap-hazard, though a complete fertilizer *may* pay because one or two of its elements are greatly needed.

Soils are so different, and so differently affected by cropping, that it is important to ascertain just what is adapted to each farm and crop, and often to different fields on the same farm.

It is to help every farmer to find out for himself, what his own soils want, and what fertilizer he can use profitably, that the "*American Agriculturist* Fertilizer Sets" were planned. They have now been in use for the past four years by a great number of farmers, by Agricultural Experiment Stations, by Agricultural Colleges, etc., in every State east of the Mississippi River, and in some west of it, and in the Canadas. The results obtained have been of great value to the individual experimenters, and at the same time have developed some principles which will be of general application and great utility throughout the whole country.

The Plan.

Eight bags containing carefully weighed amounts of Potash Salts, of Superphosphates, of Nitrate of Soda, etc., are supplied. Three bags contain the ingredients singly; three each contain them two by two; one contains all of them; and one contains Sulphate of Lime.

The eight bags contain enough materials for half an acre. They are properly labelled, and are accompanied with full explanations and directions for use, and blanks for Reports. Applied, under the directions given, each will answer one or more questions as to the wants of the soil, and of the crop which they are used upon.

They are supplied *at the actual cost or less.* The Half Acre Set costs $6.00, and the Acre Set $11.00, including bags, labels, and delivery to railroad, steamboat, or express. (Bags, labels, etc., cost little more for the acre set than the half acre set.) Aside from the important information gained for future use, these fertilizers will, in the increased crop, go far toward meeting their cost, and often more than repay their expense. Each bag supplies fertilizers for one-twentieth of an acre—two plots on each half acre being left with no fertilizer, for comparison. The acre bags each supply materials for one-tenth of an acre. (Bag G, it will be noticed, contains a "Complete Fertilizer.") The experience of the past four years has suggested slight alterations in the proportions used, and this set differs a little from previous ones.

Half Acre Set.

Bag No.	Kind of Fertilizers.	Lbs. in Bag.	Lbs. ℗ Acre.	Valuable Ingredients.
A.	Nitrate of Soda	7½	150	Nitrogen.
B.	Superphosphate	17½	350	Phos. Acid.
C.	Muriate of Potash	7½	150	Potash.
D.	Nitrate of Soda	7½	150	Nitrogen.
	Superphosphate	17½	350	Phos. Acid.
E.	Nitrate of Soda	7½	150	Nitrogen.
	Muriate of Potash	7½	150	Potash.
F.	Superphosphate	17½	350	Phos. Acid.
	Muriate of Potash	7½	150	Potash.
G.	Nitrate of Soda	7½	150	Nitrogen.
	Superphosphate	17½	350	Phos. Acid.
	Muriate of Potash	7½	150	Potash.
H.	Plaster	20	400	

The full "Acre Set" is the same as "Half Acre Set" except that the quantities are twice as large.

The Manner of Conducting the Experiments,

is very simple. A plot of half an acre, or an acre, of uniform, nearly level, worn-out land, is laid out in ten parallel strips, the first and last left unmanured, while the contents of one of the eight bags is applied to each of the intervening eight plots. The whole is then planted with potatoes, corn, or other crop, as is convenient, cultivated with care, and the produce on each crop noted. Full explanations of the experiments and directions for making them, also for laying out the ground, are given in pamphlets which go with each set of fertilizers.

What is Expected from the Experiments.

First—By watching the growth, and measuring the gathered crop, it will be easy to see how the crop on that soil is affected by each material and each mixture.

Second—A comparison of each lot with the *no fertilizer* plots will show which fertilizer pays the greatest profit.

Third—Such experiments stimulate thought, and lead to more extended investigations,

Fourth—It will be a good step toward helping each experimenter to decide for himself, and for his neighbors, *what* fertilizers, if any, they can use more largely in the future.

Fifth—Experiments like these will awaken interest in the minds of boys, and serve as an excellent school for them.

It is recommended that other fertilizers than those in the sets be used on parallel plots of same size.

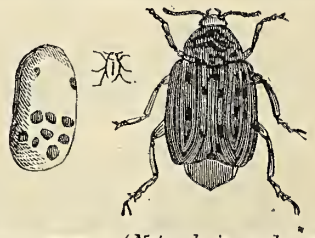
A majority of the experimenters selected Corn and Potatoes, probably because they are easy to manage, but more trials made with Grain, Grass, Sorghum, and Roots, and in the Southern States, Cotton, Sugar Cane, and Cow Peas, are desirable.

We urge upon the experimenters of previous seasons the importance of repeating the trials through a series of years, and trust many will continue the good work, and report their results.

The following parties have kindly consented to put up and ship the bags, without any charge above the actual cost, viz: Messrs. H. J. Baker & Bro., 215 Pearl St., New York, and the Mapes Formula & Peruvian Guano Co., 158 Front St., New York. —These houses will each put up precisely the same articles, subject to analysis by Prof. Atwater. Our readers may send their orders (accompanied by the cash) to any one of them. If any prefer to send their orders to the office of the *American Agriculturist*, we will hand them to the dealers. We have named the above houses because they are near at hand. We shall be quite glad if other leading reliable houses in different parts of the country will supply their patrons with similar sets of fertilizers and thus widen the field of useful experiments.

The Bean Weevil.

Several letters lately received show that the Bean Weevil is spreading rapidly. The latest from "N.," Branford, Conn., mentions the kind of manure used, as if thinking that this might possibly have something to do with the insect. The Bean Weevil, shown in the engraving, is a near relative of the Pea Weevil; which rarely, if ever, has more than one insect in a pea, while a bean may have from one to a dozen in each seed. The parent beetle lays her eggs on the outside of the young pod; the grubs, when hatched, eat their way into the young beans, where they live upon them, destroying the material stored in the seed-leaves for the nourishment of the future bean plant. When the grubs first enter the bean, they cut a hole quite up to the skin, or hull of the bean, to prepare for the future escape of the Weevil; afterwards they have only to feed and grow. When the grub has reached its full size, it goes into the pupa state, and remains dormant until spring, and usually does not make its exit until after the bean is put into the ground. The Weevil in due time appears, lays its eggs, and the round is repeated. There is but one help for this, now really serious pest, which is for all in a neighborhood to agree to plant no buggy beans. It is a matter in which individual effort can



THE BEAN WEEVIL (*Natural size and magnified*).

do but little. If one person plants only sound seed, all his neighbors who are less careful will supply him with an abundance of weevils. This is one of the many cases in which farmers' clubs, or other associations of farmers, can be of great use. A little coöperation would greatly diminish both the Bean and the Pea Weevil. It is said that the weevils within the beans may be killed by putting the seed in a tight jar, and pouring in a teaspoonful of Spirits of Turpentine to each quart of beans. However effective this may be, we do not advise its use, save in very rare cases, where a supply of sound seed can not be readily procured. The weevils, whether two or a dozen, have eaten the food intended for the young bean plant, which needs all that was thus provided. As a consequence, even if the germ is not destroyed, and it rarely is, the young plant will be weak, and can not, later in life, be so vigorous and productive as a plant from a sound seed. If all resolve to plant no buggy peas or beans, the evil, if not entirely checked, would cease to increase at its present rapid rate.

Bee Notes for April.

Last month we referred to the desirability of stimulative feeding, in early spring, whenever the bees could gather no stores. In the more northerly States, as also in Canada, there is no continuous yield of nectar until very late in May or early in June, when the white clover blooms. About the same time the raspberry blossoms furnish a rich harvest of fine honey. Before this time, if we except the maples—the early soft, and the later hard maple bloom, and the fruit blossoms, there is little for the bees to gather. Very often the unsuitable weather makes the early bloom of the maple and fruit trees of little avail. The willows and scattering blossoms, like the dandelions, yield but little honey, though very valuable as furnishing pollen, which is a necessary food element in brood rearing. Even if there were bee-pasturage in April and May in abundance, still the many cold, stormy days would make it impossible for the bees to gather honey.

It is a well-settled fact that whenever the bees are idle, or cease from storing honey, the queen withholds her eggs, or at least brood rearing is greatly abated. The season's profits depend on the condition of the colonies as to numbers; populous colonies can only follow from active brood rearing. The apiarist should spare no pains to stimulate his bees to the greatest activity during the spring months.

What and How to Feed.

It is recommended to uncap the honey in frames of comb left over from the previous season, in case they are at hand. These are set into the brood-chamber beside the brood, one at a time, at intervals of three or four days, depending on the amount of honey in each. The fact that the cells are uncapped induces the bees to transfer the honey to other cells, and this stimulates brood-rearing. Some bee-keepers do not uncap the honey, but separate the brood combs, as the strength of the colony will permit, and place the comb, with its two or three pounds of honey, between the combs containing the brood. This is done at intervals of four or five days, as the strength of the colony will warrant. It must be remembered that the brood should always be covered with bees. As the new comb occupies the space needed for brood, the bees remove the honey, and thus the activity is secured. The writer has tried all the methods, and has obtained the best results from actual feeding, which can always be followed, whether we have the extra combs or not. Extracted honey may be used for food, or we may make a syrup of granulated sugar. In feeding extracted honey, it is best to add one-third as much hot water as there is honey. The warm, thin honey is more acceptable to the bees. The syrup may be made by using one pint of water to two of sugar, by measure. It may be heated until the sugar is dissolved. Feed this when warm. Three-eighths of a pound, or one-quarter of a pint per hive each day.

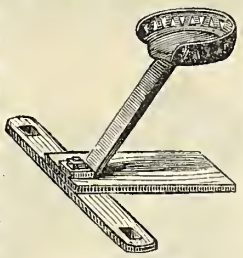
The Feeder.

The best feeders are so made that they may be placed immediately above the cluster of bees, and so not expose them to the chilling outside atmosphere. They should also be easy of access by the bees and to the bee-keeper. A cheap feeder may be made by simply perforating the tin cover of a common glass fruit jar with fine holes. After the honey is put into the can, we have only to quickly invert the latter over a hole in the honey-board. The atmospheric pressure permits the liquid to deseend only as fast as the bees sip it up. The only objection to this feeder is its form. It so raises the chaff-cushion or blankets above the bees that they are not well protected from the cold. Could the feeder be the shape of an oyster can and lie on its side, it would be complete. Such could be easily made.

Improvement of Rocky Pastures.—Clear out the rocks do you say? That would mean, in some cases, an expense of two or three hundred dollars, and in most localities would not pay. Cut the brush, and plow the land? That would be impracticable oftentimes, so thickly strown are the rocks. A farm is in sight from the window where we write, where persistent cutting of brush has made a clean turf around every rock. It was a brush pasture five years ago, where grass was very scarce, and whortle-berry bushes, briars, and scrub oaks were plenty. Something must be done, or the field be abandoned as a pasture. The owner, a very conservative and plodding farmer, assailed it in the latter part of August with bush scythes, cut everything up close by the roots, and after the leaves had time to dry burned it over. The dressing of ashes gave fresh start to the grass. The brush started in the spring, but there was much less cutting to be done the following August. They grew feebler every year until they were dead. The roots are now decaying in the soil, and feeding the roots of the grass. The only expense has been a few days' labor for cutting and burning brush, and for grass seed. This method pays.

A Wagon Seat.

Mr. Jas. S. Lake, St. Croix Co., Wis., sends us a sketch and description of an adjustable wagon seat. A six-inch board has slots cut in each end, so as to go between the stakes of the wagon. Another board, one foot wide, and three feet long, is fastened to the first in the position shown in the accompanying engraving. An old seat, from a harvester, or mower, is fastened upon the boards, when an easy and satisfactory seat is provided for a wagon for drawing wood, lumber, etc.



A WAGON SEAT.

Agricultural Experiments — The New York State Station.

HENRY E. ALVORD, "HOUGHTON FARM," N. Y.

Farming is essentially an experimental business and has always been. Most farmers are experimenters. Experience, so necessary to successful farming, the thing as well as the word itself, is based upon experiment. But such work done by individual farmers has been of little general value because lacking in system, completeness, verification, comparison, and averaging of results. The first condition necessary to economy in experimental work is organization and the concentration of efforts. Hence the origin of the Experiment Station, a place where farm experiments becomes a regular business and the sole work of the place. Where,also,science can be brought to aid in the investigations.

The first instance of such an organization by farmers themselves, is that of the Leipsic Agricultural Society, which bought a farm for the purpose near Möckern, in Saxony, and began systematic and scientific experiments, thirty years ago. Individual labors by scientific men for the general good of agriculture, like those of Boussingault and Lawes, bear earlier date.

The Experiment Station at once found the need of high-priced labor and expensive appliances beyond the means of the farmers themselves. But it soon proved valuable and won recognition as an institution worthy of public maintenance. Nearly every European government now supports one or more Agricultural Experiment Stations.

In America, stations have been established in four States—Connecticut, North Carolina, New Jersey, and New York. The first three named have had their stations more or less connected with colleges. In other States the Agricultural Colleges have instituted experiments without special funds for the purpose, notably in Michigan, New York (at Cornell), Massachusetts, New Hampshire, and Tennessee.

Connecticut was the first State to introduce the public Experiment Station to the farming of this country, and it was largely secured through the interest and efforts of the senior proprietor of the *American Agriculturist*. Work was began at Middletown in 1875, and was there conducted for two years. Since that time the State appropriation has been expended at New Haven, all in laboratory work, chiefly analyses of fertilizers and feeding stuffs, by Professor Johnson and his assistants. Meanwhile Professor Atwater has continued field experiments in and around Middletown, as periodically recorded in the *American Agriculturist*, and superintended a series of co-operative trials by over three hundred colleges and individual farmers in several different States.

In New Jersey, Professor Cook has had the advantage of a farm at New Brunswick, where he has carried on field and feeding experiments in addition to his laboratory work at Rutgers College. The North Carolina Station recently removed from its connection with the State University, to Raleigh, and now an entirely separate institution, devotes itself almost exclusively to chemical analyses of various kinds.

New York is the first State to establish an Agricultural Experiment Station under a Board of Control, independent of other institutions, and upon a large, well-equipped farm of its own. After annoying delays and hindrances, this Station has been located near Geneva, where a farm of 125 acres has been purchased, which is represented as well suited to the purpose, except, perhaps, that the soil is in too high a condition for experimental work. The place came into possession of the State on the 1st of March, and it will take a very short time to make the changes necessary in the ample buildings. The Station will therefore go into full operation the present season, and with the appropriation of $20,000, made for its yearly support—liberal, and yet not a dollar too much—the usefulness of the new institution should soon be demonstrated. It deserves the hearty support of the farmers of New York, and cannot fail to benefit those of other States.

The Board of Control has placed the Station in full charge of Dr. E. Lewis Sturtevant, as Director, and he is already upon the ground. Dr. Sturtevant is known both at home and abroad for his investigations in animal and vegetable physiology. He has long been an advocate of the practical value of science applied to agriculture, frequently contributing to the agricultural press, and successfully practising his theories upon his own "Waushakum Farm," at South Framingham, Mass. His experience and original methods as an experimenter will contribute to inspire confidence in the new work at Geneva, and add value to reports which may be expected in the future from the New York Station.

Raising Oats.

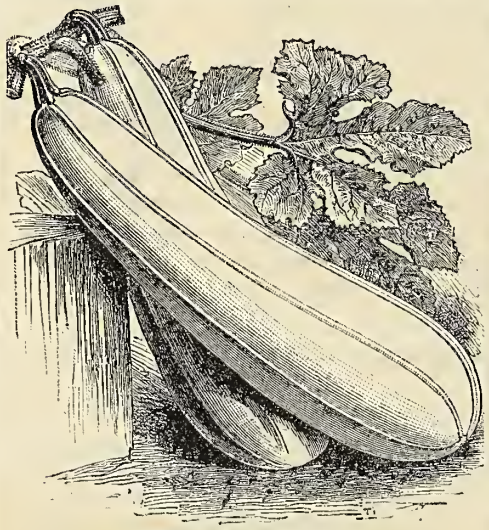
Oats are one of the important staple crops of our country. The Census figures of 1880 give the Wheat crop at 459,591,093 bushels, and the Oat crop at 407,970,712 bushels, or only abou 11 per cent less.—Oats require good soil well prepared. With favorable weather a fair crop may be grown on moderately good land, illy tilled, but under such conditions it is an uncertain, unsatisfactory crop. Smaller farmers at the East usually sow oats after potatoes. Then the stubble with a dressing of say six cords of manure is turned under for corn, to be followed with potatoes, having only ashes and plaster or other "hand manure." The third year the land is "laid down" to grass with an oat crop. If the soil is poor, sometimes a little fine manure is evenly spread over the lightest portions, or over the whole, the aim being to "even off" the field to secure a uniform stand and quick start. The amount of tillage usually given is very little—simply once plowing and harrowing; then harrowing in the seed. Sometimes a rough soil needs more harrowing, and perhaps rolling, but it rarely gets it whatever the necessity, and yet we see very fair crops gathered, and a good stand of timothy and clover follow.

Every farmer wishes to sow oats that will stand up, fill good and yield well both in straw and grain. The hulless oats offer no advantage, for we want them for horse feed, and for this the hulls are rather an advantage. Most farmers feed the straw either thrashed or unthrashed, hence a kind having strong, leafy straw is to be sought. New varieties are constantly being pressed upon our attention. Most successful farmers are content with good, bright, heavy American oats, if possible brought from a northern locality. These should be well winnowed and screened, so as to sow only the heaviest third or half of the sample. When oats are bought of the seedsmen at a high price, one can hardly afford to winnow out half. The result is that good home-raised oats, or those bought at the mill, cost less and are worth more than those bought at a high price.

We have had good success with both the "Surprise" and the "Probstier" oats, both of which have been grown long enough to be reasonable in price, and a little inquiry among good farmers will enable even a novice to purchase his seed oats at a moderate price, so that he can select one third for sowing and feed the rest. He may at the same time buy a few of the high-priced kinds of his favorite seedsman, give them each a fair chance on good soil and have seed of his own raising for next year. It is exceedingly important to sow oats early, as soon after the frost is out, as the land is dry enough to be plowed. There is great advantage in thorough tillage if the land be dry, twice plowing and most thorough harrowing. Hence fall plowing is to be recommended on all stiff or clay land. If grass seed is not to be sown, harrowing with the "smoothing harrow" should be continued at frequent intervals until the oats are at least eight inches high, especially if the land is weedy. It is usually well worth while to do this, and to seed down with grass seed alone in August. It gives a better crop of oats, fewer weeds go to seed, and a better and evener catch of grass will follow, with very little danger of burning out. The self-sowed oats which are almost sure to cover the ground protect the young grass, while the oats are killed by the frost, the dead plants forming a good mulch for the grass, during the winter following.

Vegetable Marrow—Our Squashes.

English gardeners would regard their list of vegetables incomplete without the Vegetable Marrow. When they come here they are surprised to find this vegetable not cultivated and scarcely known by name, and some have written expressing surprise that the seeds are not offered by our seedsmen. The seeds are catalogued by all our leading dealers, but are under "Squash," a name little known abroad, where gourd is the generic term for all the family known to us as pumpkins and squashes. The Vegetable Marrow is popular in England, as it is the only one of the Squashes that can be raised in that country with any certainty. The common variety is about nine inches long, and of uniform diameter throughout. The Long White, shown in the engraving, is a variety of comparatively recent introduction, which grows 18 inches long, or more. The Marrows have a thick flesh, the seed cavity being small in proportion. When taken at the right time, the flesh is very tender and free from fibres, and



VEGETABLE MARROW.

while without any marked flavor of its own, is, if well cooked, an acceptable vegetable when served with drawn butter or other sauce. To those familiar with our much better varieties of squashes, it seems insipid and watery. Unless with those who have acquired a taste for the Vegetable Marrow in Europe, there is no reason why it should be cultivated in our gardens, for among our early varieties the "Summer Crook-neck" is much to be preferred to it, while among the later kinds, the "Boston Marrow," "Hubbard," "Butman," and others, are so greatly superior in any stage of their growth, that we have really no use for the "Marrows." That our choice varieties of winter squashes "in any stage of their growth," are superior to the "Marrows," is not generally known, however. These winter varieties are seldom eaten except when quite ripe, and in a condition to keep through the winter, at which time the shell becomes very hard. But few seem to know that these squashes are edible at almost any stage of their growth; we have used them when they were no larger than a goose's egg, and found them greatly superior to any of the early varieties in their best condition. It is true that they have not the full sweetness or the dryness of the variety when thoroughly matured, but nevertheless are excellent. We were induced to make a trial of these unripe winter squashes, from an experience in Mexico. In that country a popular dish is *puchero*, which corresponds to our old-fashioned "boiled dinner," or, as it is called in some localities, "boiled pot," in which various vegetables are cooked in the same pot with a piece of meat, and where the ingredients all flavor one another. One of the principal vegetables in the "*puchero*," is *calabacitos*, the very young fruit of the common pumpkin of the country—somewhat like our field pumpkins. All of our Summer Squashes are eaten in the unripe state, and the winter varieties are very acceptable in the same condition. Besides, it will be an advantage to those which remain to remove and use some of the late-set fruits.

Test All Seeds Now—Important.

No one can, by merely looking at them, positively tell whether any particular lots of field, garden, or flower seeds have or have not sufficient vitality of germ to start into vigorous growth. Yet it is a severe loss, often a disastrous one, to go through with all the labor and expense of preparation and planting or sowing, and find too late that the crop is lost because the seeds are defective. All this risk can be saved by a few minutes time all told, in making a preliminary test, and it should be done *now*, before the seed is wanted, and in time to get other seed if necessary. While there are always circumstances affecting the vitality of seeds (often unobserved), the remarkable season of 1881, and the unusual past winter weather have been likely to somewhat affect almost all kinds of seeds. They may not have matured the germ; it may have been destroyed by heat or moisture; minute insects may have, unobserved, punctured or eaten out the vital part of a considerable percentage.

SIMPLE TEST.—Select from the whole mass of the seed, 100, or 50, or even 10 seeds, that will be a fair sample of all. For larger seeds, as wheat, corn, oats, peas etc., take a thin, tough sod, and scatter the counted seeds upon the earth side. Put upon the seeds another similar sod, earth side down. Set this double sod by the warm side of the house or other building, or of a tight fence, moistening it occasionally as needed. If very cold, cover, or remove to the kitchen or cellar at night. The upper sod can be lifted for observation when desirable. The swelling and starting of the seeds will in a few days, according to the kind, tell what percentage of them will grow. —A box of earth will answer instead of sods, both for large and small seeds.—Small seeds of vegetables or flowers, and even larger ones, may be put into moist cotton, to be kept slightly moist and placed in the sun or in a light warm room. For small quantities of valuable flower seeds and the like, half a dozen will suffice for a trial test.—With any seed, for field or garden, however good, it is always very desirable and useful to know exactly how many or few are defective, and thus be able to decide how much seed to use on an acre, or other plot.

Hereford Cattle.

The Hereford cattle are a well-marked British breed. We are in the habit of regarding the Devons as a typically ancient breed, but it may be doubted if they can boast a greater antiquity than the cattle of Hereford, of Gloucester, Shropshire, and part of Wales adjacent to Hereford. "The historic period" with reference to cattle goes back over only one or two hundred years. Though within this period the Herefords have changed in no essential character except as good breeding confirms good points and weakens poor ones. Yet in appearance a very great change has taken place in these cattle. Ask any tyro who has attended the fairs or read an agricultural book, or even looked at pictures, "What are the characteristics of the Hereford breed of cattle?" and he will first of all say, "White Faces." Yet the white faces which are now so marked a feature, are a modern invention, and in our opinion no great credit to the inventor. It is not much over a century since they became common, and only quite recently that they have been regarded as characteristic of the breed.

THE HEREFORD BULL "COMUS."

Lewis F. Allen, in his "American Cattle," thus describes the Hereford of to-day, or, more accurately, of 15 years ago:—"Give a Devon a quarter more size, somewhat more proportionate bone and horn, a trifle shorter leg and longer body, a little coarser in every part, and you have a good Hereford, in all excepting color." The ancient race were of a dark-red or brown color, with occasional variations—mottled faces, and the like. No doubt, also, when white cattle with red ears, like the wild cattle of Chillingham, were so fashionable (some 600 years ago), the cows were crossed with these bulls, but the strong blood of the ancient breed prevailed, so that the strange cross was completely absorbed and lost. From some of the out-crosses, however, came a famous bull with a white face, and this quality he perpetuated in his offspring, and by selection it has become fixed. The Herefords, as we know them, are a white-faced breed, the white often running back along the back bone, and showing itself freely upon the brisket, belly, and switch of tail.

Mr. Allen's description is excellent as to form. The shortness of the legs gives, however, an impression of coarseness not really correct, and the same peculiarity exaggerates the impression of length of the body. Any one familiar with cattle is at once impressed on seeing animals of this breed with the remarkable development of beef points. In fact, they possess every admirable point of the Devons, as beef makers, with quicker maturity, which makes them formidable rivals of the Shorthorns. The cows are occasionally above mediocrity as milkers—an indication that this quality might be cultivated to advantage. As working cattle the oxen are superior—exceeding the Devons in weight, and the Shorthorns in docility and activity; they take strong hold of the affections of that large class of American farmers who love a good yoke of cattle. So easy keepers are they, that when taken out of the yoke after years of hard work, they will fatten so readily and quickly that they make excellent beef. Hereford steers make beef which is esteemed as second only to that of the little Devons, which is a favorite in our Eastern markets.

THE HEREFORD COW "KATY."

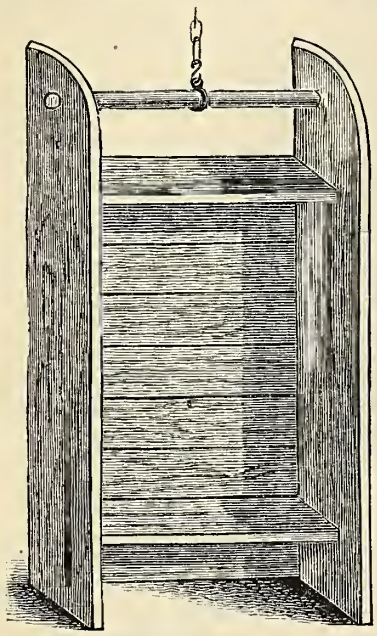
There were several straggling importations of this blood made into the United States prior to 1840, but none that amounted to anything, as it was allowed to run out. In that year an English farmer, William Henry Sotham, brought out to this country a bull and eleven cows and heifers of this breed. In this importation he was assisted or was in partnership with Hon. Erastus Corning, of Albany, father of the gentleman who now bears the name as senior, and who is the owner of the fine animals of which we give portraits, engraved for the *American Agriculturist* from recent photographs. Mr. Sotham divided the herd with Mr. Corning, taking his to Perch Lake Farm, Jefferson Co., N. Y. He made subsequent importations, and has been for years an almost constant writer on the superiority of Herefords to Shorthorns. In fact he has written so much and in such a spirit that he has certainly injured the cause he advocated. Through him, however, more than through any one else, has this noble breed become known to American farmers, and it is steadily increasing in popularity. During the past year several importations have been made and the breed is growing in favor greatly at the West. Mr. Corning's fine herd, which has been kept up by later importations, has gone on improving; it was pronounced in 1840 by so good a judge as A. B. Allen as comparing "favorably with the best we met of this breed in England" — it has never deteriorated. The bull "Comus" (4,457 Eng. Hereford Herd Book), was imported by Mr. Corning in 1873, and in July next will be ten years old. He won first prizes at the New York State Shows of 1876-'79-'80 and '81. His present weight is 2,100 pounds.

The cow "Katy," by "Comus," was dropped in 1877, and is of Mr. Corning's "Princess" family. She won 1st at the Elmira Show of 1881, and was a member of the

Gold Medal herd both last year and the year previous. We are confident that the Herefords will achieve a marked popularity on the great plains. They are not an artificial breed like Shorthorns, and will probably turn grass and corn into dollars faster and better.

A Home-Made Leveller.

Mr. H. E. Wright, Crawford Co., Pa., makes a leveller in the following manner: The runners are of 1 1/2-inch plank, 6 feet long and 8 inches wide; they are set 4 feet apart, and



A LAND LEVELLER (STANDING ON REAR END).

the top is covered with heavy inch boards. The forward levelling board is set 18 inches from the front end, and the rear one is placed one foot from the opposite end of the leveller. The front levelling board comes to within two inches of the bottom of the "runners," while the lower end of the rear board is one inch from the bottom. Mr. W. writes us: "This is a charming thing with which to make a lawn. I put two horses to the leveller and ride upon the top, and if found necessary stones or other weight may be added."

Exhaustion of Soil.

BY DR. J. B. LAWES, ROTHAMSTED, ENGLAND.

Considerable fault has been found with me for saying that profitable agriculture is founded upon the exhaustion of the soil: if exhaustion is considered an unsuitable term, I do not object to change the word for reduction of its fertility. The prices of the various products of the farm are regulated chiefly by the labor expended on their production, and not upon the amount of soil ingredients which they remove from the land. If all nations agreed to pass a law compelling every farmer to restore to the land the whole of the ingredients which he removed by his crops, we should not only see such a law followed by a very general, and large rise in the price of our ordinary foods, but also that the relative cost of the foods themselves would be very much altered. Even without such a law we find that necessity, from time to time, compels farmers to alter their mode of cultivation, and cropping; thus, when they find the fertility of their land decreasing, they devote themselve to cultivating such products as contain more atmospheric, and fewer soil constituents. For instance, let us take the case of sugar beet. If the roots are sold off the farm, in each 2,000 lbs. of the dry roots about 175 lbs. of soil products will be removed from the land; while by the conversion of the same amount of sugar beet into beef, or mutton, only about 10 lbs. of soil products will be removed; and if the beet is converted into sugar none of the soil products need be lost to the land.

For further illustration, I will follow grass through the same series. If sold as hay, seven or eight per cent of the soil constituents are removed from the land; very much less, if the grass is converted into milk; still less if converted into meat; and none at all if converted into butter; this last being a purely atmospheric product, all the soil constituents may find their way back to the land, except perhaps some small portion, which, in the form of skim-milk, might be used to produce pork. It takes 5 or 6 lbs. of corn to produce 1 lb. of increase in a pig; a large per centage of this increase is fat, and a farmer who preserves the blood and offal, would exhaust very little of his soil products in producing bacon. It is the rich fatty cheese which commands the high price; and the low priced skim-milk cheese which is comparatively rich in soil products. The same law holds good with regard to flour; the finest flour is exceedingly poor, both in nitrogen and minerals; coarser flour contains more, and bran a still larger amount of the soil ingredients. As man cannot exist without a certain amount of these soil products in his food, and as all his efforts in the production of his food are directed towards getting rid of such soil products, the way in which he obtains them in a separate form becomes rather an interesting physiological question.

Now and then an effort is made to stem the tide, and quite recently some enthusiastic ladies induced the Lord Mayor of London, to take the chair at a meeting held to advocate the consumption of whole meal bread. One of these enthusiasts paid a visit to Dr. Gilbert, with a view to his conversion, but I am afraid did not meet with much success, as, many years ago we examined into this subject very carefully, and came to the conclusion that however beneficial it might be for wealthy people—who consume quite as much, if not more food than is good for them—to take into the stomach a somewhat larger amount of indigestible matter; it was quite otherwise with the poorer classes, who derive the greater part of their sustenance from bread. It would appear that while man prefers to take the bulk of the food he consumes in respiration, as free as possible from all indigestible matter, and soil products—that is to say, in the form of fine flour, butter, fat, sugar—he takes the necessary supply of the soil products in the form of the lean part of meat, garden vegetables, tea, coffee, beer, and salt.

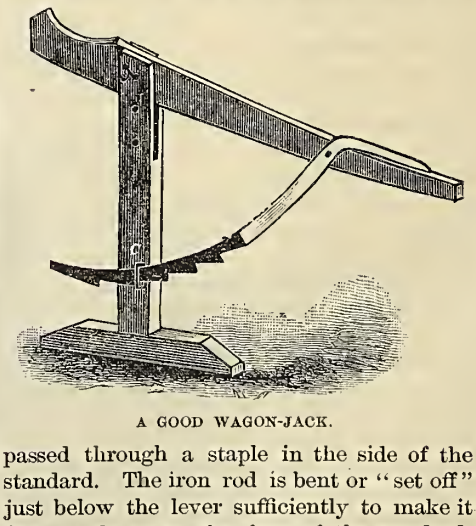
The necessity for green vegetables during the winter is much felt in our large towns, and in certain districts it has given rise to a very extensive trade in water-cresses. The rivers which run out of the chalk formation are very rich in nitrate of lime, derived from the washing out of nitric acid, from the soils which rest on it, and for miles together the beds of these rivers, with additional artificial beds along the banks, are planted with water-cresses, and tended with as much care as is usually given to a garden.

I suggested to a person who rents a river running through my property, that he should apply some super-phosphate of lime to his cresses, and as might be expected, the result was a greatly increased growth in the crops. The application of the same super-phosphate to my pasture, without nitrate of soda has no effect, but when used with that substance it produces a remarkable growth of grass.

By the employment of labor in various ways, a farmer can increase the salable products of his farm, and at the same time reduce greatly the exhaustion of the soil. It is quite clear to me that in the future the agriculture of Great Britain must tend towards such a system of cultivation. I feel inclined to think further, that, under the existing competition of the Western States of America, those farmers who live in the older States, may find it to their interests to follow the same course. Fortunately with the increase of wealth, an increased demand springs up for all those products, which—having their origin in the sun and atmosphere—have by the labor bestowed upon them, been freed more or less from the compounds which they have taken up from the soil.

A Wagon-Jack.

Mr. William Hart, Allegheny Co., Pa., sends us a sketch and description of his wagon-jack, from which the accompanying engraving is made. The standard is made of 2 1/2 by 3 1/4-inch scantling 26 inches long; the lever is 1 1/4-inch thick and 3 feet in length. The slit in the upper end of the standard is deep enough to allow of the adjustment of the lever by means of an iron pin. The pin hole is 9 inches from the fulcrum end of the lever. A strip of iron one inch wide and 3/16-inch thick is bent and fastened to the lever as shown in the illustration. The lower end of the curved iron rod is cut with notches and



A GOOD WAGON-JACK.

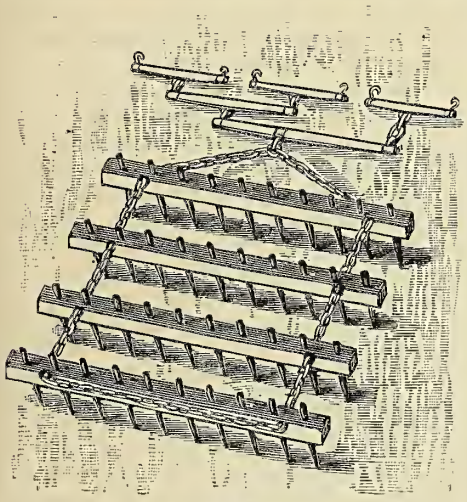
passed through a staple in the side of the standard. The iron rod is bent or "set off" just below the lever sufficiently to make it fit squarely upon the face of the standard. The staple is 8 inches from the bottom. In lifting the wheel, press on the end of the lever only. When the wheel is to be lowered, press upon the end of the iron rod, as well as the lever, which throws the rod up and the notches away from the staple.

Rats and Mice.—If a share of the pains taken to catch rats and mice after they are in a house or apartment were employed in keeping them out, it would save much

trouble. Even an old house, where there are many cracks and crevices, may soon be made vermin proof. Scraps of sheet tin of the thinnest kind may be had of the tinsmith; this may be cut up with a strong pair of shears, and so fitted as to close up the entrance holes. Holes may be punched in the tin with a common awl, or a nail filed to a point, through which to put tacks to hold the tin in place. Some holes and cracks may be more easily closed by means of plaster of Paris. A sufficient quantity of this is mixed with water, to be about as thick as mortar; then, before it hardens, fill with it the holes and passages of the creatures; in a few minutes it will be solid. When all such entrances have been stopped the animals must either come in by the doors, or gnaw a new opening, an operation in which they may be detected.

A Square Frame Harrow.

Leonard H. Murch, Franklin Co., Ind., sends us a sketch of a harrow that the people



A SQUARE HARROW.

in his county hold in high favor. The main feature of this harrow is the way the bars are separated from each other by a heavy chain frame. The above engraving shows the harrow in position for work.

Experiments in Making Sugar from Early Amber Cane.

BY PROF. W. A. HENRY, PROF. AGRICULTURE, UNIVERSITY OF WISCONSIN, AT MADISON.

The culture of Amber Cane spread rapidly over several of our Western States, but still the industry has received little recognition from those most needed to aid its progress. Because the "Sorghum" of war time had failed many predicted a like result for Early Amber, which resembles it quite closely. An important source of scientific information to aid this struggling industry was the Illinois Industrial University, where Prof. Scovell conducted a series of experiments that fully confirmed the statements of Prof. Collier, at Washington, as to the possibilities of some of the varieties of Sorghum becoming sugar-producing plants. The past season, Michigan, New Jersey, Wisconsin, and possibly other States, through their Agricultural Colleges, took up the investigation. So far, in Wisconsin about three thousand dollars have been spent from a special appropriation made by the last Legislature to the Professor in charge of the Experimental Farm.

Last spring, Mr. Magnus Swenson a chemist in the State University, was chosen to conduct the experiments, and to him the favorable results obtained are due. Under his direction a building and suitable machinery, such as crusher, steam evaporating pans, vacuum pan, centrifugal, etc., were constructed, and in September he began his experiments. It should be understood on the start that whatever was undertaken was in a practical way, and there is no reason why the results obtained cannot be reached in large works.

After numerous trials with different reagents, Mr. Swenson came to the conclusion that the Milk of Lime defecation was the simplest, and gave satisfactory results. By the proper use of lime a syrup can be made which is wholly free from the "sorghum" or acid taste, and which possesses a good body, though the lime gives it a darker color. The quantity of lime required depends wholly upon the amount of acid in the juice, and litmus paper is used to show when enough is added. But the last season our efforts were rather towards sugar than syrup, and several plots were worked up into sugar.

The process employed was not different from that used in other countries for producing sugar. Lime was added to the juice until all the acid was neutralized, and the juice was then boiled in open pans to a thin syrup, and transferred to the vacuum pan, where it was further reduced to a thick syrup at a temperature of from 140° to 160° Fahrenheit. The thick syrup soon began to crystallize upon its removal from the pan, and in a few days it was put into the centrifugal machine, where the molasses was thrown out and the sugar left. The molasses which was thrown from the sugar was quite thin and was again reduced in the vacuum pan, thus yielding a second crop of crystals.

A few explanations to those not familiar with the manufacture of sugar:—The cane juice, as it comes from the crusher, contains cane sugar, glucose, and a vegetable acid, besides other impurities of minor importance. The acid in the juice acts readily upon the cane sugar and converts it into glucose, which is scarcely half as sweet as cane sugar. By using a sufficient amount of lime the acid is neutralized and rendered harmless. But this does not remove all the difficulties, for even after the acid is neutralized the cane sugar will still turn to glucose by fermentation if the juice is allowed to stand very long in a warm place. It is necessary, therefore, that the juice be defecated by lime, and then boiled down as soon as possible after being expressed from the cane.

The third chance of losing the sugar is by the high heat which occurs when the syrup is boiled thick. To obviate this the juice is only reduced to a thin syrup in the open pan, and further boiling is carried on in the vacuum pan. In cane not ripe, the glucose is present in excess of the cane sugar, but in cane about ripe the per cent of glucose runs quite low. In a syrup where there is much glucose, the cane sugar will not crystallize, hence sugar cannot be made from green cane.

In the following table we have the results of two plots as worked out by Mr. Swenson. Plot *A* was planted with Early Amber seed from Mr. Seth Kenny, of Morristown, Minn.; plot *B* with Early Amber seed from Mr. Charles Eustis, of Fort Atkinson, Wis. Plot *A* was very much exposed, and a great deal of the cane was lodged, while plot *B* was more sheltered, and the cane was better.

	Yield of plot A 2-13 of Acre.	Yield per Acre at same rate as plot A.	Yield of plot B one-fifth Acre.	Yield per Acre at same rate as plot B.
	2/13		1/5	
Total lbs of cane	4,669	30,348	4,710	23,550
Total lbs of juice in cane	3,875	25,187	3,909	19,545
Weight of juice expressed	2,680	17,420	2,732	13,660
Lbs. juice left in bagasse	1,195	7,667	1,177	5,885
Per ct. of cane sugar in juice	9.24	....	10.53	....
Per cent of glucose in juice	3.53	....	2.68	....
Total lbs. cane sugar in cane	358	2,337	415	2,075
Lbs. cane sugar in ex'd juice	248	1,612	290	1,450
Lbs. cane sugar left in bag'se	110	715	125	625
Lbs. of syrup obtained	332	2,158	408	2,040
Lbs. of cane sugar separated	142	923	199.5	997.5
Lbs. of molasses	100	1,235	208.5	1,042.5
Bushels of seed	4¼	27½	6⅜	32
Weight of bushel of seed	53	53	53	53

Assuming the sugar to be worth 8 cents per lb., and the molasses 30 cents per gallon, we have the value per acre—

Yield at the rate of plot A.

923 lbs. of sugar @ 8 cents	$73 84
103 gallons of molasses @ 30 cents	30 90
Total	$104 74

Yield at the rate of plot B.

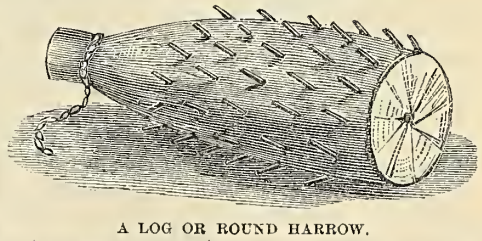
997½ lbs. of sugar @ 8 cents	$79 80
87 gallons of molasses @ 30 cents	26 10
Total	$105 90

With over 2,000 pounds of sugar in an acre of cane, which can be grown as cheaply as corn and more readily here in Wisconsin, I think it is safe to predict that our people will never let the subject rest until it has been thoroughly tried; even with only one-half the sugar saved it will pay to grow cane. My only anxiety is lest those who can bring more money than skill to bear upon the investigation will make failures, and thus bring discouragement.

The value of the cane seed has not been tested at this writing, but it will be at the Experimental Farm. The advantages of sorghum cane over beets for sugar are many. The cane seed and leaves alone will pay for growing the crop. Cane is cultivated in the same manner as corn, and our farmers can be induced to raise it much more readily than they can beets. If from any cause sugar cannot be made, a syrup may be produced which is equal in value to "New Orleans." This cannot be claimed for the beet root.

A Round Harrow, or Ditch Cleaner.

Mr. H. E. Wright, Crawford Co., Pa., has a home-made implement for cleaning out open ditches, etc., which he calls a "round harrow." A one-horse "harrow" is made as follows: Take a log 3½ feet long and 18 inches in diameter; taper off one end somewhat, and cut a notch around the tapered



A LOG OR ROUND HARROW.

end by which to fasten the draft chain. A six-foot log is about right for two horses. Holes are bored in regular order, and ordinary harrow teeth inserted in them, as shown in the engraving. It will clean grass, etc., out of an open ditch in a rapid manner.

The Silk Exhibition, held by the Woman's Silk Culture Association in Philadelphia in February last, was very successful. The first prize of $200 for cocoons

raised by women, was awarded to Mrs. Taylor, the mother of the late Bayard Taylor, who is in her eighty-second year. This shows that the raising of silk worms is an occupation suited to the old as well as to the young.

Feeding Poultry; Raising Chicks.

BY D. Z. EVANS, JR.

One of the secrets of successful poultry raising is the art of feeding properly, not merely at regular intervals, but on the most suitable food, and keeping the chicks growing as rapidly as possible from the very start. It is very poor economy to stint the poultry, especially young growing stock, for, when once stunted, it takes a long while to recover, if it does occur at all. For the first twenty-four hours after the chicks emerge from the shell, they should remain under the hen unmolested, both to dry and gain strength and hardiness. They do not require any food, as the store nature provides will last over this time. As the chicks hatch sometimes irregularly, the older ones can be cared for in the house until the others are ready to be taken away, when the hen and her brood can be removed to a roomy coop, with a tight-board bottom and a rain-proof roof. They should be fed five times daily, but only just what they will eat up clean. The first food should consist of stale bread *moistened* in water or in fresh milk—the milk is decidedly preferable. Do not *wet* the food, as very moist or sloppy food will cause sickness and a high rate of mortality among young, tender birds. Keep the water (for drinking) away from them until they are six to eight weeks old, but if milk can be spared, give them occasional drinks

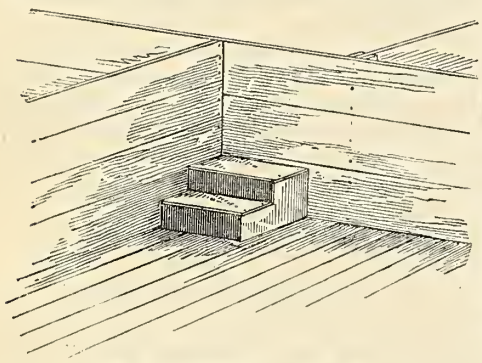


Fig. 1.—STEPS IN A GRANARY.

of it. The too lavish use of corn meal has caused more death among young chicks than has cholera among grown fowls. Until the chicks are half-grown, corn meal should be but sparingly fed, but after that time, when judiciously used, is one of the very best and cheapest foods for fowls and chicks. Nine-tenths of the young turkies and guinea-fowls, which die when in the "downy" state, get their death blow from corn meal, as it is a very common practice (because it is so "handy," and suits lazy people so well) to merely moisten, with cold water, some raw corn meal and then feed it in that way. Young chicks relish occasional feeds of cracked wheat and wheat screenings, while rice, well boiled, is not only greedily eaten by the chicks, but is one of the very best things that can be given. It frequently happens that damaged lots of rice, or low grades of it, can be bought, at low figures, in the cities. As it increases so much in bulk in cooking, it is not an expensive food for young chicks, even at the regular retail price, though it would not, ordinarily, pay to feed it to full-grown fowls very liberally or very frequently. In the absence of worms, bugs, etc., during early spring, cheap parts of fresh beef can be well boiled and shreded up for the little chicks, but care must be taken not to feed more frequently than once in two days, and only then in moderation. This feeding on meat shreds is very beneficial to young turkey and guinea chicks when they are "shooting" their first quill feathers, as then they require extra nourishment to repair the drain on immature and weakly bodies.

Granary Conveniences.

BY L. D. SNOOK, YATES CO., N. Y.

PORTABLE STEPS.—The better plan of constructing grain bins is to have the upper front boards movable, that the contents may

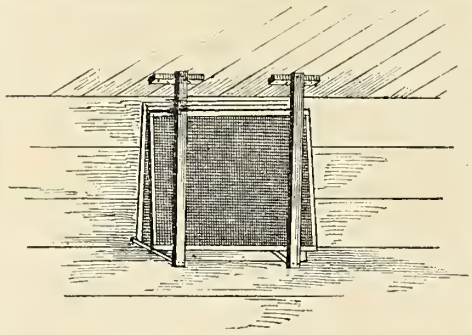


Fig. 2.—A SIEVE RACK.

be more readily reached as they lessen. But as there are tens of thousands of granaries where the front bin boards are firmly nailed; a portable step, like that shown in figure 1, is almost a necessity. It should have two steps of 9 inches each, and be 1 foot wide, and 2 feet long on top. It is light and is easily moved about the granary.

A RACK FOR SIEVES.—Every owner of a farm needs a few extra sieves, which, when not in use, are usually thrown in some corner, or laid on a box or barrel to be knocked about and often injured by this rough handling, besides being frequently in the way. A little rack, which may be readily made above one of the bins in the granary, as shown in figure 2, is convenent to put sieves out of the way, and keep them from injury.

A PLACE FOR GRAIN BAGS.—Grain bags are too expensive and valuable to be scattered about the buildings. A simple mode of securing them is shown, which is at once cheap and safe. In the ceiling over the bins, staples are driven about 4 feet apart, to which are attached pieces of wire 2 feet in

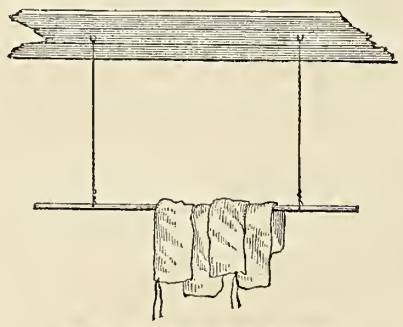


Fig. 3.—A GRAIN BAG HOLDER.

length. To these wires is fastened a pole 5 feet in length, over which the bags are thrown when not in use, and they are then out of reach of mice from the bins and wall.

Gumption on the Farm.

FROM TIMOTHY BUNKER, ESQ.

MR. EDITOR.—I went down to Shadtown yesterday, to hold a court on a liquor case, and after court was over, stopped at Deacon Jehiel Johnson's to get my horse shod. Deacon Jehiel, or Jiel as they call him for short, is one of the characters of Shadtown, and as good a sample of the sort of folks the Connecticut farm makes, as you will find in our eight counties. He is a farmer to begin with, and is not fairly out of the age of Homespun yet, for he produces almost everything that his family consumes or uses, that the soil and climate will mature. Then he is a carpenter, wheelwright, wagon maker, blacksmith, shoemaker, stone cutter, runs a saw-mill, and deals in lumber. And to top all, Deacon Jiel is a model citizen, a magistrate, a school visitor, prominent in church affairs, plays the organ, cleans the pipes, regulates the sexton, and is ready for every good word and work. I found him, and his son Ike, at work, in the blacksmith's shop ironing a sleigh. The shop was an open shed, which served the double purpose of smithy, and wagon house. In one corner was the forge and bellows. The forge was made of granite, taken from a stone wall, and laid up with mortar, by his own hands. The chestnut trough in front was dug out with his own tools, to hold water for cooling his iron, and tempering his steel. The anvil block grew on his farm, and was put in place many years ago with his own hands. He confessed to having bought the anvil, and the sledge and hammers, and the files, and the screw cutter, but the most of the tools he had made himself. He used to make his own charcoal, he said, until he found it less trouble to buy soft coal in the village, which answered the purpose rather better. He got into blacksmithing, he said, mainly to save time. He used to have to go three miles to a blacksmith's shop, for every little job he wanted. If he needed a horse shod it would take a full hour to go and come, and sometimes he had to wait an hour before his turn would come, and when the smith got at his horse, he would have to look on for nearly another hour, to see it done. It was pretty much in this way with all the jobs he wanted done. It set him to cyphering, and he calculated that he should save lots of time and money, in the run of a year, if he made him a forge under the shed, bought him some blacksmith's tools, and did his jobs himself. He said that all the apprenticeship he ever had was just in looking on, and seeing how the blacksmith did his work, while he was waiting. After he had found out that he could do the common jobs he wanted done for himself, his near neighbors began to come to him for repairing and mending, and he had all the work he wanted for rainy days and odd spells. He said he took to carpenter's tools when he was a boy, and did pretty much every thing that was wanted in the way of making and mending wood work, before he was twenty-one. Pretty soon after he got started in business for himself, he thought he could make his own lumber for sheds and for repairing buildings if he had a saw-mill. He dammed a stream that ran idle through his pasture and started a mill, which had been a great convenience and a source of profit. It was much cheaper to cut his own logs, and saw them at home, than to

go to the Landing six miles off, pay twenty dollars a thousand for boards, and other lumber, and haul them home. He had plenty of woodland, and with his saw-mill he could work off all the timber he wanted to sell. He said he made his own carts, wagons, sleds, sleighs, and ironed them, and they were quite as serviceable as anything he could buy. He made his own shoes and boots, and the most of those his family wore. He said his son Ike took naturally to the use of tools, and had got it into his head that he could make a sleigh that would beat anythiug on the road in Shadtown.

"I told him a good deal depended on horse flesh in the matter of speed. He said he knew that, and he thought it was a disgrace to load up a smart horse with five hundred pounds of wood and iron, in a vehicle, where a hundred pounds would do just as well. So the boy went to work, sawed his lumber, and got up this sleigh you see, all but the thills, which you can buy cheaper thau you can make them. He has laid out about ten dollars upou it, and I guess it is as good a sleigh as you can buy in the market for thirty-five dollars. I think Ike has spent about three weeks on the job, at odd spells, aud has got more satisfaction out of it than he could have found in hanging rouud the grocery or going to the dance. He has a comely looking vehicle if he wants to ride, and something that will bring money if he wants to sell. He has gained in independence by his experiment, and is worth more to himself and society, whatever may be true of his workmanship."

But, I asked, "How in the world do you find time for all this variety of work which usually keeps a half dozen men busy enough?"

"I know the old saw," said the deacon, 'Jack at all trades and good at none,' and that other, 'Let the cobbler stick to his last,' which runs in the same direction. Both have a fair amount of common sense in them, and are good in certain conditions. If I had 200 acres of fat land, and was getting an income of 5,000 dollars by working it, it would not pay me to be my owu mechanic. But that is not my condition in life. I inherited a small farm, a large part of it woodland, and pasture, where a man has to scrub to get a living. I am at a distance from any large market, and several miles from the village where I should have to go for a mechanic or for any little job, that called for one. Division of labor is a grand thing, if the laborers live close together, and the exchange of labor does not cost too much. There are a multitude of jobs that need to be done on my farm, that I can do myself, just as well as a mechanic, and in half the time it would take me to bring a mechanic here, or to carry my job to the mechanic. On an average the skilled labor of a mechanic is worth twice as much as that of a farm laborer, say $2.50 to $1.25. If I can put the skill of a mechanic into my brain and muscles, of course, it is better than to do a common farm hand's work."

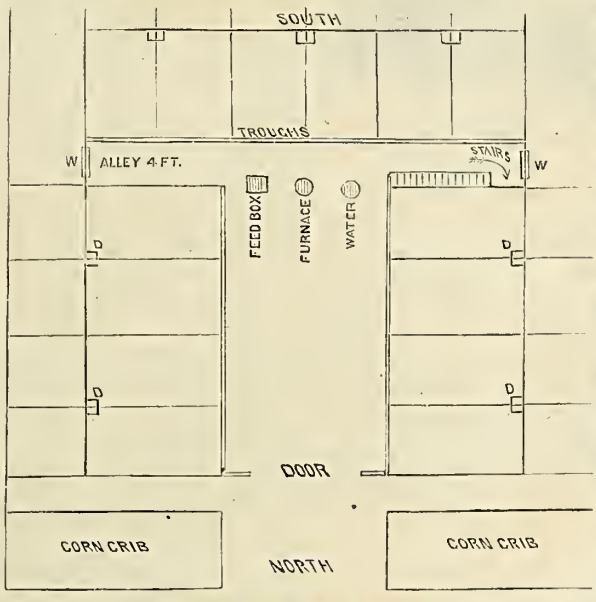
"Then why not turn mechanic and move into the village?" I asked.

"Thereby hangs a tale," said Deacon Jiel. "It's because I should have to go to the village or to the city to find employment, that I do not want to go. I should be out of employment half of the time possibly. Here employment of a useful kind finds me every day and every hour. I earn enough every day to meet all the reasonable wants of myself aud family. This house and these buildings are mine. These acres that feed and clothe us are mine, as they have been my father's before me, back to the first settlement of the country. They planted these grand old shade trees that shelter us in the summer heats, and add to the beauty and comfort of our winter life. This orchard and garden that yield their tempting fruits, an abundant supply the year round, were planted by those who have gone before me, and I feel under some obligation to hand them dowu to those who shall come after me. I was born with the love of the soil in my bones, and could hardly be content away from these ancestral acres. With my tastes and principles, I am more iudependent and happier here than I could be as a millionaire iu the city. There is something better than money."—When I got home I told Mrs. Bunker what the Deacon said, and Sally said, "Deacon Jiel has hit the nail on the head this time."

Ground Floor of Piggery.

BY MR. J. C. LAIRD, OLMSTED CO., MINN.

I have been a subscriber to the *American Agriculturist* most of the time for the last twenty-five years, and have received a great mauy good ideas from it. You publish very numerous engravings of useful things that are great helps to a farmer, or indeed to everybody. In the February number you give the plan of a Piggery, or hog house, which at present I am quite interested in, as I want to build one very soon or early in summer, and I enclose a pencil sketch of one I have planned myself, thinking it would be about such a one as would suit me. My object is to have a good many hogs near together and convenient to feed. I propose a main building, 12 or 14 feet high, the upper story for ground feed, seed corn, work shop, etc., etc., with windows in both gables to light it. The lower or ground floor is to be used for feeding, cooking feed, butchering, and room for a wagon. The pipe of a furnace can be run up through the floor, then carried to the north end of the building, and then run out of the roof. The water tank can be connected with the main or large tank at the well. The feed-box is to be connected by a spout with the feed-bin

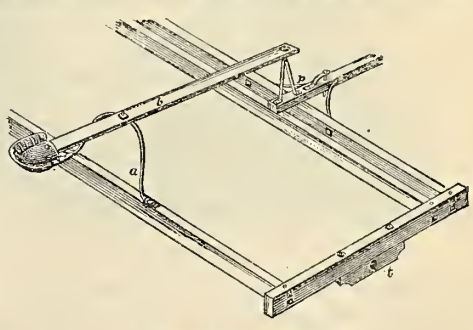


GROUND FLOOR OF A PIGGERY.

up stairs. The pens, 14 in number, are all 7 feet wide by 12 feet deep. I will have open yards back of each pen. The roof on the pens would be shed roof, and hipped at back end, 5½ or 6 feet high at eaves, and running into the main building just under the eaves. A door leads out of each pen into a yard. Also connect pens with doors or movable partition, and some of the pens will have doors into the main room for butchering. The main building will be 18 by 32 feet.

A Good Roller Seat and Frame.

Field rollers are a necessity upon many grain farms. For mere rolling, one section is quite as good as two or even three sections. Of course they are not quite so easily turned at the corners, nor do they roll uneven ground as well, but farmers are learning to dispense with dead furrows as much as possible and practice level cultivation. By rolling arouud the field, a small strip is left at each corner when turning, and when the center of the field is reached, make one trip to each corner and back. The roller will turn quite easily, by turning upon a circle at the corners. The following dimensions make a well-proportioned roller: Frame made of 3 by 6-inch hard-wood; ends 5 feet 8 inches long; sides 9 feet long. The heads should be four in number, and 2 feet 11 inches diameter, and covered with staves 4 inches wide, 2 inches thick, and 7 feet 10 inches long, projecting over the head at each end 2 inches. Staves should be attached to the heads by ½-inch wooden pins, or spiked on. If the ground is rough and stony, shrink on four tires, one over each head; ordinarily one at each end will answer. An important part of a roller is the seat, and for safety and ease of riding the one here shown is excellent. A board, *b*, is held in position by braces of heavy wagon tire iron (old tire will answer). The one at *p* is secured to top of tongue by the same bolts that hold the tongue to the frame, while the one at *a* is bolted on at the points shown in the illustration. This makes a firm, yet elastic and safe seat. For seat, use an iron one from the mower or reaper, bolting it on the end of the board. In a one-section roller the shaft may be of tough, hard-wood, 4 inches square, with a 3-inch bearing at each end, which should run in a wooden boxing attached underneath the frame as at *t*. Lining



A GOOD ROLLER SEAT.

the upper and rear part of box with a piece of smooth zinc, will make it run easier, last longer, and prevent squeaking when in use.

Yates Co., N. Y. L. D. S.

A Farm Mill.

Dr. C. Baxley, Fauquier Co., Va., has a combined Mill, Corn House, Silo, and Engine House, from the sketches of which the accompanying engravings are made. He writes us: "About a year ago I bought through an advertisement in the *American Agriculturist*, a three-horse engine, and arranged it to run a 12-inch stone mill to grind for farm purposes; but the severe winter locking up all the water mills brought such a rush of neighborhood custom that in a few months the little engine was exchanged for a six-horse one. Last summer's drouth still keeping up the rush for meal from miles away, a greater power was required. Thus has developed from very small beginnings and with total inexperience in mills, engines, or machinery, the plan which is sent. Figure 1 shows the front of the Farm Mill. The engine room occupies the right end of the ground floor. To the left is the mill room. A silo for preserving green fodder is in the left end of the building. A broad driveway leads up to the second floor which contains: a large room over the silo, the shelling room with its corn bins, etc., and a carpenter shop which occupies the front end of the room over the engine, the other part being open to the roof for passage of the smoke stack. Fig. 2 shows the rear of the Farm Mill, the doors to the mill room and silo. Figure 3, shows the ground plan of the building: 45 feet long, 28 feet wide, with stone wall 18 inches in thickness. The plan of the second floor of the Farm Mill is given in figure 4.

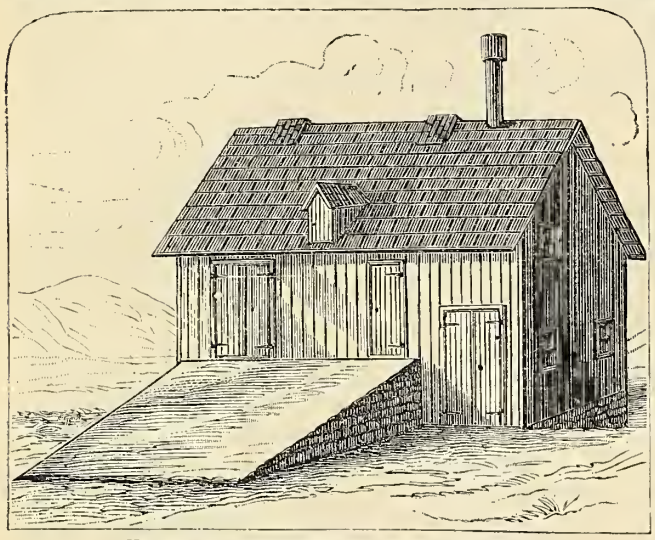


Fig. 1.—FRONT ELEVATION OF FARM MILL.

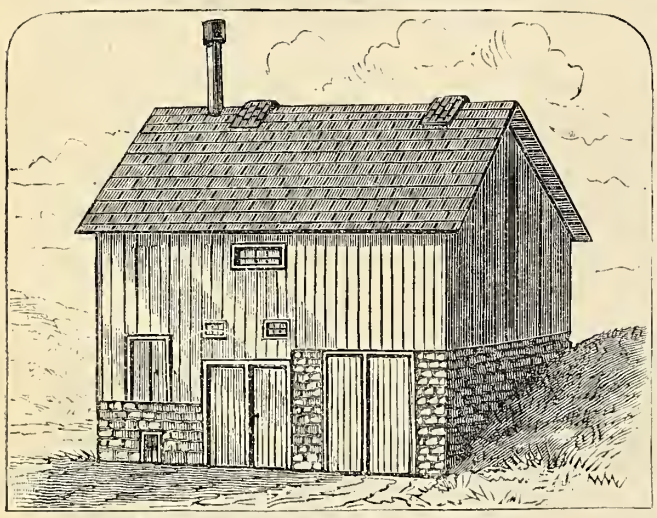


Fig. 2.—REAR ELEVATION OF FARM MILL.

A number of spouts lead from the shelling room to the mill room below that cannot be exhibited in the plan. There is no doubt that many farm mills constructed similar to the one here described and illustrated would be not only convenient but profitable to farmers throughout the country.

Fodder Rations and Feeding Values.

BY DR. M. MILES, DIRECTOR OF EXPERIMENTS AT "HOUGHTON FARM," N. Y.—CONCLUDING ARTICLE.

The carbohydrates and fats by themselves are not, however, sufficient to sustain life, but they must have a supply of proteid material with them or they cannot be made use of in the system. When proteids are fed by themselves, or in excess of what the system requires, an increased activity of the tissues takes place, involving a rapid circulation of proteid materials, but when carbohydrates and fats are added to the ration, this activity of proteid materials is diminished, and likewise the demand for them—without any decrease in the efficiency of the work of the system. The cheaper carbohydrates can therefore replace a certain amount of the more expensive proteids, and the work required of the animal, whether it be the laying on of fat, the performance of muscular labor, or the production of milk, will be carried on quite as effectively as under the more costly diet.

The carbohydrates and fats seem to serve nearly the same purpose in connection with a proper ration of proteids, but they differ in this, that in cattle and sheep at least, fats cannot be used in any considerable quantity to any advantage. One part of fat as food has generally been estimated to be equal to two and one-half parts of carbohydrates, but as this estimate is entirely based on the chemical composition, it does not follow that that relation of values will hold good in the living nutritive machinery of animals. The small amount of fat in our common cattle foods, as corn, oats, hay, etc., which is probably sufficient for all purposes in the feeding of cattle and sheep, will render this supposed ratio in the value of fats and carbohydrates a matter of but little importance. In oil-cake meals, whether linseed or cotton-cake, the fats, which are in larger proportion, are probably less valuable. The amount of proteids, carbohydrates, or fats in a food is not, however, a reliable index of the feeding value of these constituents, as in different articles of diet they vary largely in digestibility. If a nutrient is in a form that is largely indigestible, its value will be diminished, as it is only the food that is digested that can be of use to the animal.

Digestion experiments are being made at the German Experiment Station, but they are yet too few in number to establish any rule that can be accepted as conclusive in regard to any particular food. It is highly probable that the inherited peculiarities of the digestive organs of different breeds, to say nothing of individual peculiarities, will have a decided influence upon the proportion of nutrients that can be digested in any given article of food, and the same kind of food grown under different conditions will probably vary in digestibility. From these facts it will be readily seen that a specific answer to the text question is impossible.

We know that a variety of food elements are required to produce the best results, and

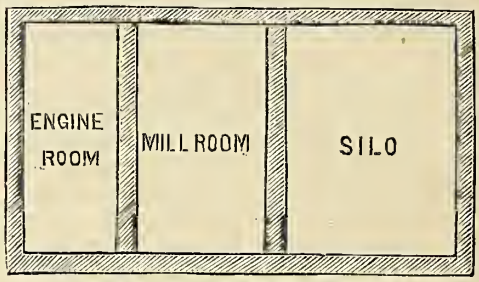


Fig. 3.—GROUND PLAN OF MILL.

we have good reason to believe that a definite ratio of the proteids to the carbohydrates would be best for the animal that is supplied with certain articles of food.

The peculiarities of animals, arising from breed or otherwise, that we have referred to as influencing digestion experiments, may have an important influence in determining the ratio of proteids to carbohydrates that would be most desirable in a given case. From the results of the German feeding experiments it may be inferred that a feeding ration, in which the ratio of carbohydrates

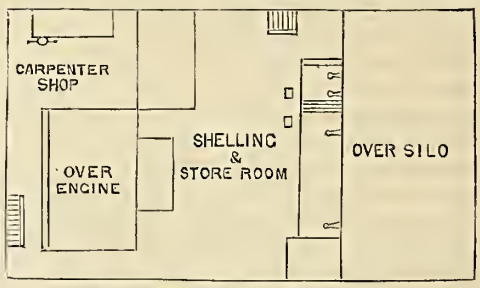


Fig. 4.—SECOND FLOOR OF MILL.

is about 1:5 for milk production; from 1:6 to 1:9 for fattening or working animals; or as wide a ratio as 1:12 to 1:14 for store stock may represent close approximations as to what would be desirable. These figures must, however, be taken as approximate estimates only, and more extended experiments will be required to establish their correctness.

The following table, made from the best materials in my possession, will serve as an aid in preparing feeding rations:—

Feeds.	*Per cent of Digestible Proteids.*	*Per cent of Digestible Carbohydrates.*	*Ratio of Proteids to Carbohydrates.*
Meadow Hay	3.47	48.6	1 : 14
Clover Hay	6.6	43.0	1 : 6.5
Fodder Corn	3.2	45.8	1 : 14
Corn Meal	7.5	71.0	1 : 9.5
Malt Sprouts	20.7	47.7	1 : 2.3
Brewers' Grains	4.07	12.24	1 : 2.6
Linseed-Cake Meal	25 5	58.9	1 : 2.3
Decorticated Cotton-Cake Meal	30.26	36.76	1 : 1.2
Bran	12.76	51.76	1 : 4

Any given sample of these articles might vary materially from the proportion of constituents given in the table, but the wide variation in composition of the different feeds is intended to represent the average of fair samples. The last five articles mentioned in the table have a larger proportion of proteids than would probably be desirable for any special purpose, and their great value as feeds would consist in their supplementing other feeds in which the carbohydrates are in excess. A judicious use of these data will be useful to the practical man, but they should not be followed blindly as positive truths. From what has been presented in regard to the physiology of feeding, the difficulties in the way of making a direct comparison of foods as to value must be obvious.

How to Set a Hen.

There is a right as well as a wrong way to set a hen to secure a "good hatch." Poor hatching may be due, in some cases, to the infertility of the eggs, yet most of it is due either to a restless hen or to her not having been properly set. If the eggs become too dry, which they are apt to do in early spring, when high winds prevail, or if set high up in a nesting box and the nest made of dry, absorbent material, the chicks will be found dead in the shell, even though they are about ready to hatch. The skin which surrounds the chicks becomes dry and parchment-like, and clings fast to the little prisoners. We prefer a no-bottom box for a nesting box, set right on the ground floor of the hen house, and a medium sized nest, made of well broken and fresh rye straw. Where there is danger from rats, weasels, dogs, etc., necessitating more secure nests, the proper amount of moisture can be secured for the eggs by putting a fresh sod, about three or four inches thick, in the bottom of each nesting box, and making the nest upon it. If fresh and moist at the time it is put in, it will exhale all the moisture the eggs need. Two-year-old hens make better setters than yearling pullets, as they are far more constant, seldom deserting their eggs, or the young broods subsequently, as pullets frequently do. D. Z. E.

Turkey Surgery.—About a month since, a neighbor bought an extra heavy young gobbler, weighing 27 lbs. After a few days in his new home the turkey acted as if he had some difficulty in his throat, trying to throw up some undigested material. On examination it was found that there was a lump of some sort of food that had lodged in the crop, and would not pass either way. As the bird was growing weaker, and must die without relief, it was resolved to open the crop. A small slit was made with a sharp pen-knife, and a huge ball of dried grass was carefully removed. The wound was sewed up and healed kindly in a few days. A month after the operation, the young cock is apparently as well as ever, and gives fair promise of siring a noble flock of turkeys for the season of '82. We have little doubt that many valuable birds, notably young gobblers, are lost every year for the want of a little skill with a pen-knife and needle It is not very difficult to tell when surgery is called for by the swollen condition of the crop in the morning before feeding.

Law for Farmers.—II.

Farmer's Liability in Sale of Produce, Etc.

H. A. HAIGH. L. L. B., DETROIT, MICH.

In a former article, the principles of warranty, as applied to the sale of garden seeds were considered. Let us extend their application to the sale of farm products, as it is of interest to farmers to know their rights and liabilities in that regard. It was stated that in the absence of fraud, or of an express warranty, the maxim *caveat emptor* (let the purchaser take care—or look out for his own interests) is the general rule applicable to the sale of chattels. A man must buy with his eyes open, and if he does not, and thereby suffers, he cannot as a general rule get relief. But while the law does not relieve a man from the exercise of care, prudence, and observation, in making his purchases, there are certain cases where the exercise of these faculties would be of no avail, and in some of these, the law raises an *implied* warranty as to the quality of the thing sold. These cases of implied warranty are in the nature of exceptions to the general rule above stated, and among them is that of the sale of garden seeds, before referred to. There no amount of observation would reveal the quality of the seed, and hence the law raises an implied warranty that the seeds are good and of the kind represented, and if they are not, the farmer who buys them, and who has perchance lost much time, labor, and investment, by reason of their worthlessness, may recover of the seedsman the value of the crop that would have grown from the seeds had they been as represented, less the value of the crop they did produce.

But an instance of implied warranty of still greater importance to farmers is in the case of sales of articles of food. Where an article is sold for food to an actual consumer there is an implied warranty that it is wholesome and fit for such purpose. The reason of this rule rests in the danger to human life resulting from the sale of unwholesome food. If the farmer sells his products to actual consumers he impliedly warrants, whether he intends to or not, that they are wholesome and fit for food. It makes no difference whether the purchaser examines the articles or not, nor does the fact that the farmer did not himself know of their unwholesomeness relieve him of liability. It is his duty to know. This rule is well settled in New York State and has been generally followed. It has been applied most often in the sale of beef and pork; but the principle is equally applicable to the sale of food of any kind, including those very common articles of farm production—eggs, butter, cheese, milk, and all vegetables and fruits. Let the farmer, therefore, who sells any of these for domestic use, take care that they are sound, for if they are not, the purchaser may tender them back and recover the purchase money; or, without doing this, he may recover from the seller the damages sustained, and the damages might be very large.

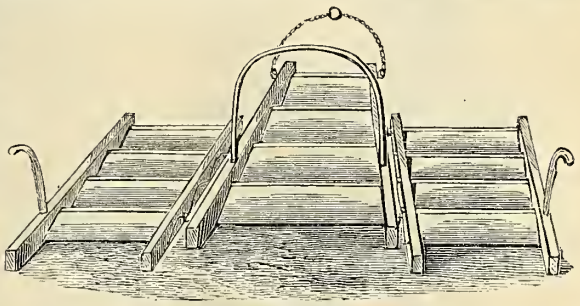
This implied warranty of wholesomeness does not arise except in the case of sales to consumers. If the sale is to a dealer, the food is then regarded as an article of merchandise, and the maxim *caveat emptor* applies.

Another instance of implied warranty, interesting to farmers, is the sale of goods by sample. In such a case the law raises a warranty that the bulk of the goods are like the sample, and the farmer who so sells his wheat, or corn, or hops, or wool, or cotton, impliedly warrants, whether he intends to or not, that they are like the sample shown.

In the sale of goods by "description" there is an implied warranty that they are merchantable or salable; but this rule is not of frequent application in the sale of farm products.

A Home-Made Clod Crusher.

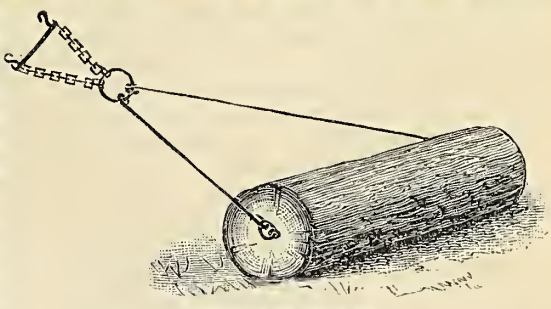
Mr. John Stewart, Sandy Creek, sends us a sketch of a Clod Crusher which he has used with much satisfaction, both as a Clod Crusher and to cover corn, beans, potatoes, etc. He writes: "It is about 10 feet long and 4 feet deep, made in three parts and hinged as shown in the sketch. This enables the crusher to adapt itself to the unevenness of the ground. It should be made from hardwood; the planks lap about two inches, and are spiked or bolted to the cross-trees from the bottom. I secure a bent pole across the center part, by which the driver may steady himself when it is necessary to add his weight to the crusher. I also place an old plow handle in the outer tie of each wing for convenience in lifting when turning the corners, thus preventing the crusher from gouging out holes in the surface of the field."



A VALUABLE CLOD CRUSHER.

A Cheap Field Roller.

"An old subscriber" in Olmsted, Ky., has found his log roller so convenient that he sends us a sketch and description for the readers of the *American Agriculturist*. For a two-horse roller, an oak or poplar log is selected, 3 feet in diameter, and 8 feet long. Large-headed iron pins are driven into the center of each end of the log. To these the iron rods from an old "sweep" horse-power are fastened by rings, and the rods are joined to each other at the opposite ends by another ring, as shown in the engraving. The rods are of ¾-inch iron, and may be bent a little just in front of the ends of the log. Such a roller can be quickly made, and does good service, where an expensive one is out of reach.



A CHEAP LOG ROLLER.

Something About Sainfoin.

Frequent inquiries about European forage crops show that many farmers are not altogether satisfied with clover, and are looking for something better suited to their peculiar soils. Many have recently asked about Sainfoin, a plant which at one time occupied so important a place in the agriculture of England, that leases specified that the tenant should keep a certain portion of the land in Sainfoin every year. The plant belongs to the same family with Clover and Lucerne. Its botanical name is *Onobrychis sativa;* it is a native of Europe, possibly of England, and has been in cultivation for several centuries. It has a long and large root; its branching and spreading stems, about two feet high, are

SAINFOIN (*Onobrychis sativa*).—TOP OF STEM WITH LEAVES AND FLOWERS.

furnished with compound leaves, like those shown in the engraving, and are terminated by an oblong head of flowers, which, being variegated with crimson and white, are very showy. The pod, which has but a single seed, is much pitted and veined. In England, Sainfoin is highly valued on light limestone or chalky soils, and is there used much the same as we employ clover—to be plowed up in a regular rotation. Its cultivation is similar to that of clover, though it is, like lucerne, preferably sown in drills in order to facilitate the weeding of the young plants. It is highly valued as a soiling crop, and is made into hay, though in the damp climate of England it is difficult to cure the large succulent stems. Either fresh, or dry as hay, it is highly relished by domestic animals of all kinds. As its large root projects above the surface of the soil somewhat, too close mowing or feeding by sheep will injure it. We are not aware if Sainfoin has ever had a fair trial in this country. We have known of its cultivation on a small scale, merely as a curiosity, but not as a regular farm crop. If any one has made a full trial of it, he will do a good service to a number of inquirers by giving the results. While one American writer says it will not succeed in this country, on account of our hot summers, another says "it suffers comparatively little from heat or cold." If it has any qualities that make it preferable to clover, our farmers ought to know it. The name Sainfoin is French, and means "healthful hay" (*sain*, wholesome or healthful, and *foin*, hay). Some writers give it as Saintfoin, and translate it as Holy-hay, a name to which it has no claim.

How Field and Garden Seeds are Tested.

BY WILL W. TRACY, DETROIT, MICH.

[Mr. Tracy, formerly Professor of Horticulture at the Michigan State Agricultural College, has charge of large test gardens at Detroit, Mich. Knowing that he has annually tested great numbers of samples of seeds, and had contrived some apparatus to facilitate his operations, we requested him to give his methods, which he has done, as follows.—EDS.]

Many farmers seem to think that while the garden seeds which they buy of the seedsmen may be bad, their field seeds, the corn, oats, wheat, etc., which they grow themselves, must be good, but this is by no means the case. For example; two years ago I tested a large number of samples of seed wheat, grown in one of the best wheat sections of Michigan, and by some of the best farmers. Their samples did not average over 60 per cent of vital seeds; the following spring, the only fields of good wheat in that region were those which had been sown with seed a year old, or with that which had been brought from a distance. Most of us can call to mind cases where the corn crop of a section was an almost universal failure because of a poor stand, the only exceptions being fields planted with old seed, or that which had been saved with especial care. I am certain that any one who investigates the matter, will be astonished at the annual loss to the country from the use of poor seed. Yet most of this loss could be avoided by simply testing the seed before sowing it. All reputable seedsmen find it necessary to make tests, even in cases where they know the seed to be fresh and it looks perfectly good, as occasionally even such seed is found to be almost lifeless. Our method of making these tests is as follows: A sample of every lot of seed received from growers or offered for sale, is sent to the trial grounds, where it is recorded and numbered,

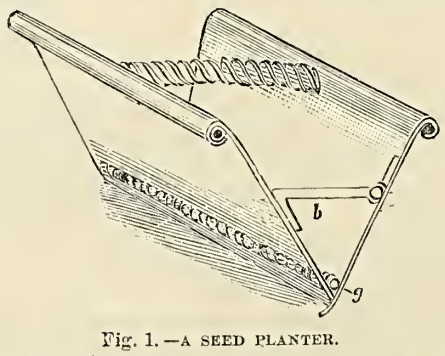


Fig. 1.—A SEED PLANTER.

and 100 seeds counted out for immediate testing as to vitality. After repeated and carefully conducted tests we are satisfied that in the case of corn, all such vines as cucumber, melon, etc., and all small seeds (smaller than an apple seed) except grasses, we can obtain the most reliable results by sowing them in soil composed of equal parts of leaf mould and sand. Pots about nine inches square and four inches deep, are filled with this earth pressed down evenly and firmly. The seeds are planted by pressing the planter (shown in figs. 1 and 2) containing the sample to a proper depth, opening and removing it, leaving the seeds at an uniform depth in a beautifully straight and even row. They are covered by pinching the earth together over them and pressing it down evenly, the row being marked by a label giving the number of the sample, the date when planted, and the number of seeds. The samples are so arranged that each pot is filled with those that require the same treatment, and with every lot of new samples one or two of the same kind of known vitality is planted in order to detect any error from unfavorable conditions. The pots are set in that portion of the propagating bed where they will receive the degree of heat most favorable to the germination of that species, carefully watered and tended, and when the seeds are well up, the plants and sprouted seeds are counted and recorded and the pot refilled for a new lot.

Fig. 2.—CROSS SECTION OF SEED PLANTER.

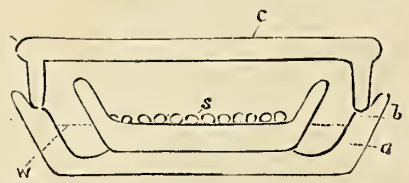


Fig. 3.—A SPROUTING APPARATUS, IN SECTION.

a, Saucer of glaced earthen ware, with shoulder, *b*, to receive glaced cover, *c*. The inner saucer containing the seeds, *s*, is of soft, unglazed ware. *w*, shows the water level in outer saucer.

The propagating bed is the side bench of a small greenhouse, with a brick flue under it. The bench is about six inches deep at the front, and ten inches at the back, and is covered with sashes which are easily raised and hooked up out of the way to permit examination of the seeds. The bottom of the bench is covered with two inches of damp sand. Peas, beans, and other large seeds are placed in a sprouting apparatus shown in section in fig. 3. They are frequently examined and all decayed or sprouted seeds removed. Great care is taken to always have water in the outer saucer, but never to let it be higher than the surface on which the seeds rest. In the case of the seeds of grasses, we obtained the best results from placing the seeds between eight folds of thick brown paper. The paper is cut in strips four inches wide and two feet long, doubled so as to be four inches square; these are opened, the seed placed in them, and laid on two folds of similar paper in the bottom of a shallow box covered with two folds more, and then kept constantly wet. The planter, figs. 1 and 2, consists of two plates of tin which move upon the hinge *b*, and are kept apart at top by a spiral spring. The seeds being placed in the lower part at *g*, the planter is forced into the soil, and the seeds liberated by pressing the upper edges together.

The Climbing kinds of Clematis.

The name *Clematis* is an old Greek one. Originally applied to some climbing plant, it now stands for a genus of the Ranunculus Family, of which there are, in the temperate regions of the world, about 100 species. As some of the plants are very showy and popular, the botanical name is generally adopted, and is vastly preferable to the common names; "Traveller's Joy," and "Virgin's Bower," which have been given to the common English and American species. The name when used should be pronounced Cle*m*atis and not Clemátis — (we once knew an enthusiastic amateur who persisted in saying "Clemarters.") The genus includes herbaceous erect species, 1 to 3 feet high, but the majority are climbers, some of them very rampant and reaching 30 feet or more. A very pleasing collection may be formed from our native climbing species, including the rather rare *C. verticillaris*, with pale bluish flowers, 3 inches broad, and several southern species, including the brilliant *C. coccinea* of Texas, most of which are figured in former volumes of the *American Agriculturist*. The comparatively recent introduction of species from Japan, China, etc., and the labors of the hybridizers have brought into our gardens a set of most admirable plants. They have flowers from pure white to the richest purple, and from 2 to 6 inches or more across. With the improvements in propagating, these fine kinds may now be had at moderate prices and are within the reach of most lovers of flowers. If we were to take up a floral specialty, it would be these singularly beautiful varieties of Clematis. Aside from these choice hybrids, there are species as yet unchanged by the florist, and which retain their natural habit of climbing high and far. These are admirable for veraudas or wherever a climber is desired, In this set we give the first place to our native "Virgins' Bower," (*Clematis Virginiana*,) which is seen almost everywhere after midsummer clambering over shrubs and trees with its profusion of white flowers, which are followed in autumn by the "Old Man's Beard," as its large showy clusters of hairy fruits are called. It will grow 20 feet or more high, is to be found in most of the Eastern States, and is well worth cultivating. As it can be had for nothing, it is seldom seeu except in the wild state. An European species, *C. Flammula*, is another excellent climber, with white and very fragrant flowers. Another from Europe is *C. Viticella*, with solitary purplish flowers 2 or 3 inches across. Among these unchanged species is one which interested us much last summer, *C. montana*, from the Himalayas. While this has been known in England for the last 50 years, it has been slow in making its way in this country. Like the others just mentioned, it is perfectly hardy, grows 30 feet or more, and produces an abundance of flowers at each joint of the stem. The engraving shows a single joint with the flowers about one-fourth less than their real size. Added to the charm of their pure whiteness, its flowers have a most pleasing fragrance, making it altogether one of the most desirable of this group of *Clematis*. The Mountain Clematis will doubtless soon be among our most popular climbers.

THE MOUNTAIN CLEMATIS—(*Clematis montana*).

Cultivation of Sage—Thyme.

Sage is one of those special crops that circumstances sometimes make exceedingly profitable. Accounts of large returns from some grower's acre or two of sage are given in the papers, and there is at once an interest in sage culture, and we receive inquiries about growing the crop. It should be recollected that sage is one of those peculiar crops for which the demand may be regarded as limited. The chief consumption is by sausage makers, and those who put up dried and powdered herbs for sale. These must have a certain quantity each year, and if for any reason there is a short supply, they will pay large prices to get the amount they require. But it is an article for which the sale, beyond certain limits, can not be increased. If an excess is produced beyond the regular demand, it will not keep over well, and as it can not be fed out, it must go to waste.

There are two methods of growing sage. The New England cultivators sow the seed where the plaut is to grow, late in May or early in June. Land free from stones, in good tilth, but only moderately manured, is worked as fine as possible, finishing with rakes after the harrow; the rows are marked at 14 to 18 inches apart, and the seeds covered au inch or less, using about five pounds of seed to the acre. The crop must be carefully weeded, especially when the plants are young, but wheu well established they require less care.—The growers uear New York follow an entirely different method. The seeds are sown in a seed bed, just as cabbage and other plants are raised for transplanting. The bed being well prepared, the seed is sown broadcast, to be, as near as may be, half an inch apart, evenly raked in and the surface well patted down with the back of the spade. The seed is sown the last of April or the first of May, and the young seedlings kept clear of weeds. In July the plants are set upon laud from which au early crop of cabbages, beets, etc., has been taken. The rows are made one foot apart, and the plants are set 8 or 9 inches distant in the rows. In New England the crop is harvested in autumn, cured and baled for market. The New York growers send nearly all of the crop to market green, there being always a sale for it when bunched in this condition. If any is left unsold, it is spread thinly to dry, and marketed iu winter. When the plants are large enough to cover the ground, those in every other row are cut out and marketed in September, and in another month the plants in the remaining rows spread and cover the ground before frost checks vegetation.—Thyme is grown in a similar manner in all respects, and the bulk of it is also sold green, the demand being about equal to that for sage.

The Leaf Beet, or Swiss Chard.

During the season of spinach one need look for nothing better in the shape of "greens;" but when the long hot days come, these plants soon run up to seed, and it is difficult to secure a supply. Among the several plants used to furnish midsummer greens is the Leaf Beet. This is by some considered a variety of the common beet, while others regard it as a distinct species (*Beta Cida*) from the South of Europe. While the ordinary beets develop an enormous root,

the roots in this are small, much divided, and unfit for food. It produces an abundance of leaves, having very large and thick leaf-stalks; these, when the plant is grown rapidly, are tender, and furnish an abundant supply of greens. The Leaf Beet is more

A PLANT OF SWISS CHARD.

popular on the continent of Europe than elsewhere—the catalogues giving half a dozen or more varieties, differing in color and in the division of the leaves. Our engraving gives the general appearance of the plant.—Its culture is the same as for the ordinary beet, except to give the plants more room. In rich soil one foot apart in the rows is none too much. Sown very early, the plants will be of a full size by midsummer. The seed is sometimes sown in September, and the plants wintered with a slight covering, to give an early crop in spring. The outer leaves are pulled away, the same as in gathering rhubarb, leaving those in the center to increase and continue the supply. In this country the leaves are cooked in the same manner as other greens. In Europe the plant is especially valued for the very broad and thick leaf stalks, which are peeled, cooked, and served in the same manner as asparagus, with drawn butter. The plant is often called "Swiss Chard," and is one of the few plants the traveller sees in the little gardens of the *chalets* in the mountains of Switzerland.

About Sweet Peas.

What is more beautiful or more fragrant than the old-fashioned Sweet Peas! How rarely we see them of late! It is true that the same thing—the intense summer heat—which makes our season of "green peas" rather short, also interferes with the sweet pea. Those who would have sweet peas should plant them early, and plant them deep. Three inches of covering is none too much, and they should be put in as early as the soil is in a condition to work. Of course they must have something to climb upon. Pea-brush, such as is given to the ordinary garden peas, is perhaps the best, but, in the absence of this, strings, wires, or whatever will allow the plants to climb for about three feet, must be provided. The old-fashioned Sweet Pea (*Lathyrus odoratus*) has, in the hands of European florists, given a number of fine varieties, the names of which will be found in the catalogues of the seedsmen. Some of these have beautiful colors, but none are more fragrant than the old sort. Sweet peas are excellent flowers for cutting, as they have long stems, and they retain their beauty for very many days. To have sweet peas at their best, plant early and plant deep.

Tomatoes in the Garden.

We say "in the garden" as distinguished from field culture. Those who make a field crop of the Tomato, have their own preferences as to varieties, and let the plants take care of themselves, so far as any training goes. But those who care either for neatness in the garden, or for excellence in the fruit, will be careful as to their selection of varieties, and take some pains with the vines. A tomato plant, left to itself, can be one of the most sprawly, unsightly things possible. With a little training it may be made, when loaded with clusters of fruit, a most attractive object. As to varieties, several quite new ones are offered this season, which we shall try and report upon later. The "Trophy" was a great advance upon all former tomatoes, and though it had its faults, it was on the whole so much better than any other that it was for years our main reliance. For solidity and flavor no other excels it, but it is not early, and does not ripen well at the stem end. Last year, besides the "Trophy," we had, among others, "Acme" and "Livington's Perfection." These gave so much satisfaction, that we shall make our main planting of them the present year. "Livingston's Perfection" seemed to have reached the point indicated by its name, yet we have others, one by the raiser himself, claimed to be more perfect than Perfection!

Those who have never trained a tomato plant are not aware how much may be done with it. If nothing more can be done, it will pay in the excellence of fruit to merely lay down a lot of brush to keep the vines from the ground. A support or trellis of some kind can be easily constructed; in previous volumes we have given a dozen or more. Supports of poles, wire, lath, or whatever will hold up the vines are such an improvement over the slip-shod method that we can not too strongly advise something of the kind. In a village garden, the vines may be fastened to a board fence, or may be trained against the side of a barn, shed, or other building, fastening as needed by loops of leather or cloth, tacked up with small nails, and they will run to the hight of ten feet or more if desired. In the way of variety, some plants may be kept to a single stake or pole, and for those fond of such matters, afford much pleasant occupation in the training and pruning, besides giving more perfectly ripened fruit. In training to a single pole or to a trellis, the heavy clusters of fruit must be supported, or they may become so heavy as to break their stem away from the main stalk and in this way be lost.

The Christmas Roses—Old and New.

The Black Hellebore of Europe (*Helleborus niger*), is called Christmas Rose, because in England it often blooms in early winter, and its flower has some general resemblance to a single rose. It has broad much divided evergreen leaves, which, with the flower stalks, spring from an underground stem, and is stemless, so far as any above-ground stalk is concerned. Our winters shut in so early, that the plant rarely blooms with us, save in early spring, and our hot summers are so severe upon its foliage that it only succeeds in a partially shaded place. Though one of the hardiest of plants, so far as cold is concerned, we have succeeded best with it by growing it in pots. It can thus be given suitable shade in summer, and, as it is the nature of the plant to form large flower buds in autumn, it can, by bringing it into a cool greenhouse, be had in flower at any time. A pot of the Christmas Rose, with its evergreen leaves, and a dozen broad white flowers, is a most cheerful thing to have in winter, especially as its beauty lasts for weeks. There are several species of *Helleborus*, in which the flowers are borne upon a regular stem, and of late years the florists of continental Europe have, by hybridizing and crossing, produced a large number of most interesting varieties, which, when they become

A HYBRID CHRISTMAS ROSE.

better known, cannot fail to be exceedingly popular. If they cannot endure in the open ground, in our hot summers, they will be valuable for pot culture as we have suggested for the ordinary Christmas Rose. The engraving, though reduced about one-third in size, gives the general appearance of these plants. These new hybrids offer a wide range of colors and markings. In some the flower is white, beautifully spotted with dark purple. In the one figured, the flowers are between two and three inches across, are of a lively rose-purple, with two lines of bright green through the center of each division. These hybrids have much the endurance of the common Christmas Rose, a quality which will commend them for cultivation in window-gardening or in a cool conservatory. Several of the species of Europe and Asia, such as *H. purpuracens*, *H. guttatus*, and others have been used in producing these hybrids, of which there are now over a hundred well marked kinds. We regard these as among the most important of recent contributions to our list of hardy plants, and hope they may soon be readily obtainable in this country.

To Prevent the Splitting of Trees.

A nurseryman who understands his business will not send out a tree with branches that make a fork. A well-formed tree has a continuous main stem, from which the branches proceed alternately, at an angle peculiar to the variety. But whether the

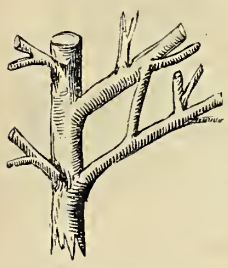


Fig. 1.

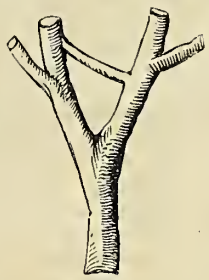


Fig. 2.

GRAFTING BRANCHES OF FRUIT TREES.

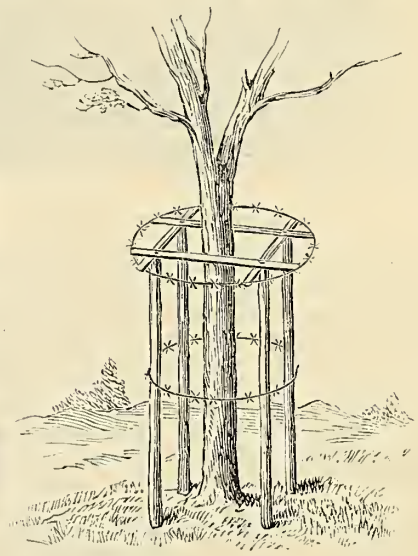
fault of the nurseryman, or of the one who plants and cares for them, we frequently see trees, especially apples, with the principal branches proceeding from the trunk to form a fork. Such trees, especially when large and loaded with fruit, are quite sure to split and be essentially ruined, and this most frequently when the tree is in profitable bearing, involving a serious loss. Again, some varieties, though having a properly formed head, have such a spreading habit that the branches, when weighted with a crop, may break away from the main trunk. Mr. W. Fulmer, Allegheny Co., Pa., gives us his method of avoiding this. He says that some varieties, such as Belmont and Golden Gate, split very readily, and the branches, when loaded with fruit are almost sure to break down. The trouble can be avoided by so engrafting the branches that they will support one another; this should be done while the trees are quite young. A young shoot upon a lower branch is selected, and cut off at the right length to be engrafted into a branch above, allowing a little in length for the part inserted. This shoot, or cion, is to be cut wedge-shaped at its upper end, and an upward cut be made in the branch above at the proper place to receive it. Usually a mere waxing over of the wound will be sufficient to secure a union, but it may be necessary in some cases to so tie the branches that movements by the wind may not displace the cion. With all young fruit trees known to split readily, and all that have been so improperly treated as to have a fork or crotch, it will avoid much future trouble if the branches are thus joined to one another by grafting. Figure 1 represents the branches of a tree made secure by grafting, and figure 2 shows the treatment of a crotched or forked tree.

Cranberry Culture.

"M.H.P.," Augusta, Me., asks if muck is essential to successful cranberry culture, and if ordinary "black soil" will not answer as well. This question, like others of similar purport, comes to us from several readers each spring. While we have no doubt that one, if sufficient pains be taken, can raise cranberries in a garden bed, upon ordinary soil, the "sufficient pains" would be utterly impracticable upon a profitable or commercial scale. While we have known small quantities of the fruit to be raised upon upland, we have no knowledge of successful, continuous culture anywhere outside of a regular cranberry bog. The requirements may be briefly stated, and we can not advise the investment of capital in a locality where these are not present. In the first place, there must be a deposit of muck or peaty soil; in some localities this muck is not more than two feet deep, underlaid by sand, which may be brought to the surface by a system of trenching; but where the muck is six or eight feet deep, sand must be brought from elsewhere, to cover the muck, after the native growth has been removed, to the depth of four to six inches. Muck and sand are essentials, but these must be so situated that they can be drained of standing water for 12 or 18 inches below the surface, by means of ditches, and more than this, there must be a supply of water at command, by which the whole surface of the cranberry field can be flooded, at once, to completely cover the plants with water, and from which the water can be drawn off as suddenly. It will be seen that there are not many localities which will meet all these requirements. Successful cranberry growing depends upon the selection of these, and the failures have come through attempting to grow the crop where some one of the conditions was lacking. There are several localities at Cape Cod, in Massachusetts; in several counties in New Jersey, in parts of Minnesota, and in other States, which seem especially adapted to cranberry culture, and where these do not exist it is not worth while to undertake it. The essentials to the successful cultivation of the crop, the various obstacles and drawbacks, as well as complete instructions for all that relates to the cultivation, are given in "Cranberry Culture," by Joseph J. White, one of the most complete special treatises with which we are acquainted. The reason for sanding does not seem to be generally understood. When the natural growth is cleared from the surface of a muck bed, the few plants that spring up and interfere with the growth of the cranberry vines will be from the seeds that may be already in the muck. When the surface is covered with sand, and the cranberry plants are set in it, they are in a condition most favorable to their growth; the sand at the same time keeps down all other plants, and the cranberry has a chance to spread and occupy the whole surface, forming a mat which will keep down all other growth. Natural cranberry bogs are often brought into abundant bearing by simply giving a heavy dressing of sand.

Protecting Trees from Farm Animals.

A good fence, and gates that horses and cattle can not open, make the best protection for trees. Our correspondent, "G. E. B.," Lichfield County, Conn., while aware of this, finds it necessary to sometimes plant trees where animals must run for a while. In such cases he protects each tree with a barrier of its own. He drives down four stout stakes, equally distant from the tree. Upon the tops of the stakes are nailed four strips, the ends of which project several inches beyond them. A piece of barbed



A TREE PROTECTOR.

fence wire is then nailed to the ends of the projecting strips (probably best put on with staples) in the form of a circle, as shown in the engraving made from the sketch sent us by Mr. B. Another piece of the barbed wire may be put around the stakes, lower down, to prevent the animals from reaching below the first circle and gnawing the trees. Our correspondent says the animals soon learn to respect this barrier and leave the trees alone.

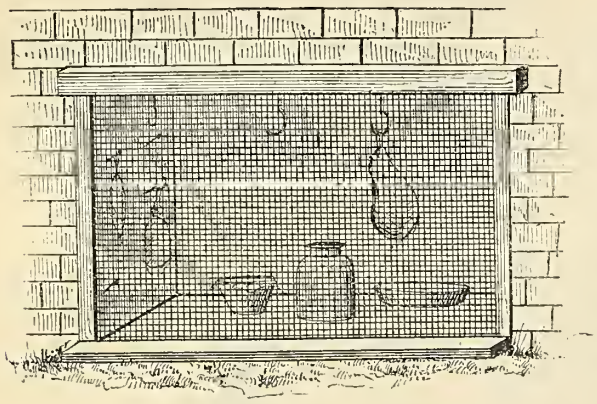
Locust Tree Culture.—Waldo F. Brown, Oxford, Ohio, says that he is planting out 1,000 Locust trees each year on land too poor to raise a paying crop of grain, on stony hill-sides and other unproductive places. He estimates that the timber on such land will be worth, in 20 years, from $500 to $1,000 per acre, and that after it is cut over, a second crop will grow in 12 years. He treats the seed as follows: "Put it in a tight vessel and pour nearly boiling water over it, and let it stand over night, when you will find about one seed in twelve swollen three times as large as the others. These must be separated from the others by means of a coarse sieve. Pour scalding water again on the seed, and a much larger proportion will swell, and by repeating this four or five times, you will get nearly all to grow, for the swelled seed will germinate as readily as corn, while not one seed in a hundred will grow if planted without this process."

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Handy Cellar Window.—Cool Room.

Many simple contrivances, costing only a trifle, prove to be very useful. My north cellar window is of ordinary size, the frame is made so that the sill, top, and side casings, are over a foot wide, as they project a little in the cellar. The sash is fitted on the inside. It has three panes of glass, and swings open on hinges from one side: and is securely fastened by a bolt at the other. Outside, a



A CONVENIENT CELLAR WINDOW.

very heavy wire screen is tacked at the edges of the casing. We thus have a cool box of the size of the window and a foot deep. The sides and top of this frame are furnished with nails and hooks. In summer it is a very convenient place for keeping fruit, vegetables, etc., over night; in spring and autumn it serves as a refrigerator, and in the winter it is fully as useful for meat and poultry, which keep well, hung up on the hooks. The sill is in use every day to cool pies, cooked fruit, or pudddings.

MRS. BUSYHAND.

[The sill may be wider and project still more into the cellar. While this is nearly level to furnish a good shelf, it should incline a little outwards to shed any water beating in during a driving storm. A loose board may be kept, to set slanting over the the outside during a rain or snow storm.—Ed.]

Good Lunches and Good Lessons.

BY A MINNESOTA HOUSEKEEPER.

I heard a brother and sister talking together about school-mates of theirs who did not "pass" the last examination, and so go into a higher class. "No wonder A. did not pass," said one. "I could not study at all, if I carried such dinners as she does—only a little bit of it and most all cake. I should have a headache every day if I carried such lunches to school as half the children do; and I never can understand what I study when I have a headache."

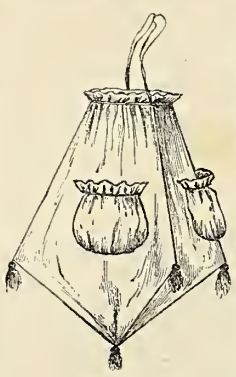
"I don't see what their mothers think," said the other. "J. T. carries just a little slice of bread and butter wrapped up in a paper in his pocket and he always looks hungry and doesn't grow at all. The L. boys learn pretty well, but how pale and stunted they are! It is because they live on soda crackers and tea mostly. I don't see how they can stand it. I shoudn't wonder if they would break down before long. W. does not carry any lunch and in the afternoon he always has a headache. He doesn't relish a meal without coffee, but he says he thinks it hurts him and he wishes he had never learned to use it. He almost always has candy in his pockets, and seems to be craving something all the time."

"It seems to me that the poorest and sickliest children and the worst scholars have the most candy and cake," said the little girl. "I believe they are half sick all the time, but probably they don't know it because they are so used to it."

This conversation went on while the children's mother was putting up their dinners for school. I kept watch to see what went into their baskets. A little cup of stewed fruit tied over the top with thick white paper (it struck me that close jelly cups would be more convenient) and a tea spoon, went into each basket. This certainly was better than pie, as there was no objectionable pastry, and there was more fruit than would have been in one piece of pie. The best of bread—half of it very fine, sweet and white, the other half sweet and brown, made of nice Graham, and all cut thin and spread with nice butter. This morning there were a few slices of cold beef, but this is not always the case. Then each had a little bottle of good milk and a napkin. When apples are plenty one is always added. Sometimes they take a cup of cold cornmeal or Graham mush to eat with their milk, or cold hominy. They approve of this more than of the sweet rice or tapioca pudding sometimes put in. Experience has taught them that it is no kindness to put any sort of sweet cake into their lunch baskets, and they feel no desire for pie though it is always welcome made with cream crust or a very moderate use of butter for shortening. Canned salmon, smoked white fish, scrambled or boiled eggs, sliced meat, cheese—any one of these adds nourishment and relish to the lunch, but these children never want pickles, probably because they do not use cake. Children have gained a very important part of their education when they have learned that good physical health is essential for the best quality and quantity of brain work. Parents mourn over the slow progress of their children at school, yet send them there with such poor blood sluggishly toiling through their bodies that the children have not enough vital energy to perform the tasks required, and "Satan finds some mischief still for idle hands to do."—Brains cannot be fed and strengthened by a diet made mostly of starch, grease, and sugar. Brain waste from brain work is restored by good blood, made of food which contains all the elements of the human body, and by healthy sleep in well-ventilated rooms.

A Good Scrap Bag.

I have found that for small rolls of stuff, a scrap bag with pockets,—in which scraps of lace, silk, embroidery, etc., etc., can be kept by themselves,—is a very useful and convenient article. One I have used a long time, is made of oil-printed calico, with a gray ground, and pink roses and green leaves in a vine over it. One yard, 10 cents, is sufficient for a bag. Cut two pieces of the cloth, each 14 inches wide, and 18 inches long. For the pockets cut 4 pieces, each 5 inches wide, and 5½ inches deep, rounded slightly at the bottom. Make a hem nearly an inch deep across the top of each pocket; stitch it twice to make a casing into which run an elastic cord, making a long knot in each end to keep it from slipping back. Gather the pockets a little at the bottom; turn in the edge all around, and stitch them on the bag. After the pockets are on, sew up the sides of the bag, and the bottom also so that the four points will meet. Hem the top of the bag to make a frill 1½-inch deep; stitch it twice, and run a cord in the casing made by doubling and twisting zephyr or "Germantown" or "Berlin" wool. Small tassels made of wool the color of the cord may be put on each corner and on the bottom.



A SCRAP BAG.

L. F. B.

Not Summer Yet.

The bright spring days, because warmer than winter, delude children with the idea that summer has come, and this delusion often keeps the doctors uncommonly busy in the early spring months. A little more care, and exercise of common sense, would prevent half the cases of sickness. It pays to provide children with rubbers. These are not expensive, and with a little care I make one pair of small rubbers serve two children, as each in turn, reaches the age of two, or four, or six years. The larger rubbers for school children being more used, usually do not wear so long.

Few parents properly teach children the use of head-covering. It would be a safe rule to impress upon them that some covering on the head should always be worn out of doors—when the air is cool or damp, as well as in the bright sunshine, at any season of year—in short, fix the habit of putting something on the head whenever they step out of doors. If found burdensome, on a warm day in the shade, it may be temporarily removed, but always be near at hand; also some light coat or shawl for protection out of doors as the weather changes, while the thick outer garments worn during the severest winter weather are unsuited to spring months, it is most unreasonable to pass from the heavy wraps to none at all. I suggest extra flannel linings in winter cloaks, to be put in when the coldest weather approaches, and taken out when spring comes. I have seen the waterproof ulsters worn by school-children during spring and fall, and on rainy summer days, made into comfortable wraps for winter by basting in colored cotton-flannel linings. I have seen other ulsters of the same thin cloth worn through all seasons without change by school girls who cannot be expected to make healthy women, having had their vitality so overtaxed by the effort to keep warm, because of insufficient clothing.

Some warm April days tempt the inexperienced to take off under-flannels, but it is seldom safe in April to remove the winter flannels unless thinner ones are substituted. For the children it seems most seasonable, if the weather favors the change, to leave off the flannels on Saturday night, when the weekly bath is taken. But in our family the flannels worn during the day are always taken off at bed-time for an all-night airing, and the winter under-flannels (home made garments of wool), preceded in fall and followed in spring by long-sleeved high-necked garments, of unbleached cotton, with thinner ones for summer. We must be guided by the weather rather than by the calendar in our changes of garments; and put on and resume the flannels if a cold snap comes on, even though it may last but a few days. If this is not done the needed warmth of clothing should be sought by putting on extra outer garments—sacks and skirts.

A great proportion of our colds result from insufficient clothing, but many are caused by remaining in unheated rooms in cool weather. If the bright sunshine and warm air make a fire burdensome at midday, the mornings and evenings are often chilly. We think it will soon be bed-time, and it is hardly worth while to build a fire. So we go to bed with cold feet and in a chilled condition, and are all "out of sorts" next day. F. E. R.

A Londoner on Bread and Gems.

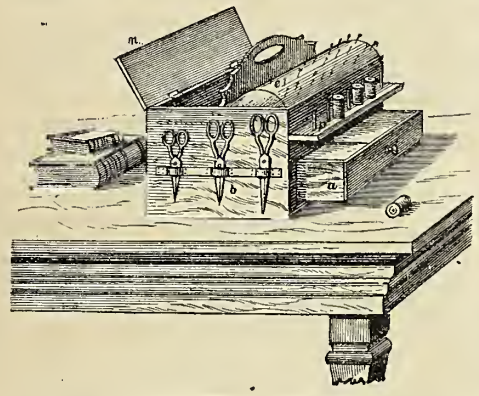
One of the discomforts of a visit to England, is the lack of good bread. Rolls of various kinds and excellence may be had, but a good honest loaf, with the "home-made" taste, is a rarity. When people are conscious of their shortcomings, there is a chance of reform. We have hope for the future of London, when "W. R.," who lives within sight of Covent Garden Market, and who is a most intelligent gentleman, and scientist, writes us as follows:—

"I was much interested in an article in the January *American Agriculturist*, by a 'Minnesota Housekeeper,' who seemed to have got a little nearer the center of the bread question than most writers on

the subject. I think I have found what few have in this country—delicious bread. That bread is not made with yeast, nor do I think any good pure wheat-tasting bread can ever be. [We can convince 'W. R.' to the contrary.—Ed.] The one thing that has beaten me is the 'gems.' I have tried several times to make these gems (or, rather, have got good women to do so for me), and we always failed. Now my idea of *the* perfect bread is quite that of the gems. It is a great thing to get rid of the yeast, but the thing of all is to get the golden grain ground to the degree one likes, and mix it with pure spring water only. Now I want to know from some of your clever ladies how it is we fail with these gems. I wonder how a gem would look after a voyage from New York? If I cannot make a gem here, I think I must appeal to some of your housekeepers to send me one."

A Convenient Work Box.

A very handy thing about the house is a suitable receptacle for needles, thimble, thread, scissors, bits of cloth, and odds and ends of sewing, which too often are thrown carelessly about, or become lost or badly soiled and tangled up, etc., etc. The engraving shows a new, neat, and desirable Work Box that will prove very handy on the sewing table. The box proper is 8 inches long, 5 inches high, and 6 inches wide. At one side is a small drawer, *a*, extending across the bottom. The



A CONVENIENT WORK BOX.

scissors may be secured to one end as at *b*, or placed inside as desired. At the right of the handle is a pin-cushion, *c*, while at the left is a little box with lid, *m*. Above and parallel with the drawer, a strip, *p*, is tacked or glued, into which at proper intervals small pieces of wire are inserted; on these spools may be placed. The box may be made from hard or soft wood, and embellished to suit the maker's fancy. L. D. S.

Felons—Boils.—Simple Remedy.

"Felons," which are usually termed "Whitlow" by physicians we believe, are a very painful and often a very serious affection of the fingers, generally of the last joints, and often near or involving the nails. As the fingers are much exposed to bruises, felons are quite common among those who constantly use their hands at hard work. If allowed to continue, until matter (pus) forms, and the periosteum or bone sheathing is affected, lancing is necessary; but if taken in time, a simple application of Copal Varnish, covering it with a bandage, is highly recommended. If the Varnish becomes dry and unpleasantly hard, a little fresh Varnish may be applied from time to time. When a cure is effected, the varnish is easily removed by rubbing into it a little lard and washing with soap and water. Dr. A. B. Isham details, in "Medical News," a number of cases of its application with uniform success, where formation of pus had not previously occurred. In two cases there was apparently a combination of the "run-around" with the felon, and in all of them there was swelling, redness, heat, and great pain. He suggests the use of Copal Varnish for felons, "run-arounds," boils, and any local acute inflammation of external parts.

Dear Potatoes.—Substitutes.

As shown in last Dec. *American Agriculturist*, potatoes are always an expensive food, more than four-fifths of their weight being nothing but simple water. Flour at $10 a barrel supplies as much actual nutriment for the same money as potatoes at 50 cents a bushel, and corn at $1 a bushel supplies quite as cheap nourishment as potatoes at 30 cents a bushel. But the majority of consumers in New York and many other places who buy at retail, now pay fully $1.50 per bushel for poor potatoes, equivalent to at least $15 per barrel for flour, or corn at $4 to $5 a bushel. In December we described some substitutes for potatoes. The following are in the same line:—

Rice Cakes do well, especially for breakfast, made thus:—Cook the rice thoroughly in a farina kettle, and while still quite warm, mould it into round cakes flattened; this to be done the previous day or evening. In the morning dip them into beaten egg, and fry in hot lard or drippings, until of a delicate brown. They are very palatable to eat with meats, or with sugar and cream if thus preferred. The coating of egg keeps them firm, prevents too much fat penetrating, and adds to their good taste and nutritiousness.

Corn Meal and Hominy, if rightly cooked, are very palatable, and even at the present high price of corn, are much the most economical, nourishing food. We prefer Hominy—not the lye-hulled, unbroken kernels, called hominy in some parts of the country—but simply the machine hulled corn, coarsely ground. The secret of cooking hominy or corn meal, especially the latter, is to mix it thin, and cook it thoroughly without burning, which cooking will thicken it enough. It can be best done in a farina kettle, or even by putting it into a smaller tin pail, and set this in a larger one partly filled with water kept briskly boiling. If in a single vessel, constant stirring is important to prevent any part of it from scorching, as that will affect the flavor of the whole. If thoroughly cooked and in sufficient quantity for use, hominy or meal will keep well in a cool place for two or three days or more, to be drawn upon as wanted. It is excellent when cut into pieces of any size, five-eighths to three-quarters of an inch thick, and fried, to be eaten with meats or with syrup. As little lard as will prevent it sticking to the griddle should be used, for if saturated with grease, or cooked beyond a light brown, it is much less digestible and nutritious.—If house-keepers will give proper attention to thorough cooking, without the slightest scorching either in boiling or frying, and exercise some skill and taste in the preparation and serving, they may greatly reduce the table expenses by making corn meal a leading and even principal dish at almost every meal.

Get Vaccinated.

During the recent prevalence of small-pox throughout the country, which still continues, though less generally, many people have had doubts as to the utility of vaccination, arising from the theories of a few persons who have figured pretty largely in a portion of the newspaper press. Well established facts are far better reliance than any amount of theory. Among many others take this one: On Feb. 21, Superintendent Day presented the following statement to the Board of Health of this city: In the Riverside Hospital during January, 1882, there were 166 cases of small-pox admitted in various stages of severity, and there were 48 deaths. Of these 44 had never been vaccinated, and of the other four no history was obtained on this point. Of the total 166, 85 had been vaccinated and 78 not. Of the 85, 77 had a very mild type of small-pox, and probably their having it at all was due to the long time since their vaccination. It is a safe rule for any person to try vaccination about once in seven years, though only a small number will find it to take oftener than once in fifteen or twenty years—some in not less than after thirty or forty years, and some never. The writer of this was vaccinated successfully 52 years ago, and though he has tried it every few years since, it has never operated the second time.

A Case for Silver Spoons and Forks.

For the housekeeper who is fortunate enough to possess more forks, spoons, or knives, than she has in daily use, the little case shown in figure 1, is very handy. It is made of white drilling. Cut one piece double thickness, three inches wider than the length of the article (knife, fork, or spoon), it is intended to hold, and long enough for twelve pockets and for a pointed flap at one end. Also one piece the length of the first, without the pointed flap, and not as wide by four inches. Run

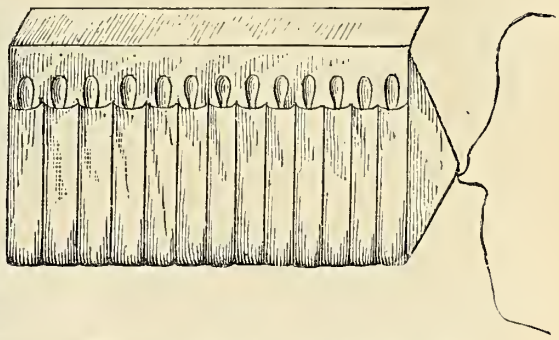


Fig. 1.—A CASE FOR SILVER TABLE WARE.

the larger piece together and turn it. Hem the smaller piece across the top, and baste it to the larger one. Stitch twelve casings large enough to let the article slip in easily, and bind all around with linen braid. Use the extra width of the back for a flap to turn over the top of the pocket. Sew strings to the pointed flap to tie the case, as shown in figure 2. Silver kept in a case does not tarnish so quickly, as when it is scattered around in a drawer or on a shelf.

Fig. 2.—THE "SILVER" CASE FOLDED UP.

Cream of Celery.

Celery is unusually scarce now, and little of it is well blanched and crisp. But even the somewhat inferior quality may be made quite palatable. Cut it into very small pieces, rejecting the toughest green portions. Add only water enough to keep it from burning, and boil it in a closely covered vessel for an hour, or until perfectly tender. Then add a sufficient quantity of milk, first thickened with a tablespoonful of flour to each pint, previously rubbed smooth with two tablespoonfuls of butter, and salt and pepper to the taste, very little of the pepper. Boil and serve as soon as the flour is thoroughly cooked. If made moderately thin with the milk, flour, and butter, it can be rubbed through a colander, when it gives a delicious, cream-like soup. Smooth squares of bread well browned are frequently put into the soup when finished. A bowl of this, eaten with bread, the same as bread and milk, makes an excellent noon lunch.

Rhubarb Canned better than Forced.—Charles Downing, who lets no occasion where his wide experience may be useful, to others, pass unimproved, writes with reference to our note on "Forcing Rhubarb" given in February: "A better method than forcing rhubarb is to can it. When the stems have gained their full size and are still tender and in good condition, cut them into half-inch pieces, cook with the desired amount of sugar, and can in the same manner as fruits are preserved. Taken when in the best condition, and canned, it will be found in spring much better than forced rhubarb, the acid being greatly moderated by the ripening influence of the sun and air.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

Several people, old as well as young, having asked about Rain Gauges (instruments for measuring the amount of the rainfall), we recently asked any of our readers having a simple Rain Gauge to send us a description. A number have kindly responded. But before talking about the measuring of rain I must reply to a young Jersey friend who goes to the very root of the matter hy asking:

"Where Does the Rain Come From?"

or his several queries may he all summed up iu that form. I am always glad to have my young friends ask about such things, as the rain, snow, ice, the wind, and the like, for a knowledge of the simple facts of everyday life is of far more use than many things that youug people are taught. This qnestion abont rain takes me hack to the time when I knew much more than I now do—or thought I did. Probably a hoy is never so wise, in his own conceit at least, as when he is near the age of 18.—When about that age, I was honored by the friendship of one of the most learned men I bave ever met, one who but for his modesty would now out-rank many who are regarded as eminent in science. This gentleman wrote a work on

"The Mechanics of Nature,"

one ohject of which was to show that all forms of force, or power on the earth, were to be traced to the sun. He kindly gave me a copy of the work, one far in advance of its time, and I think I learned more from it than any other book I ever read. Still in my youthful wisdom, I thought I had an exception to the statement that the sun was the sole source of power—and wheu I next met him suggested that

"Water Power was not due to the Sun."

He pleasantly asked me a few questions: "What moves the water wheel?"—I answered: "The force or fall of the stream."—"What supplies the stream?"—*Ans.* "The rains, of course."—"Where do the rains come from?"—*Ans.* "The clouds."—"What forms the clouds?"—*Ans.* "The vapor in the air."—And what produces tbis vapor?"—*Ans.* "The sun!"—Thus, you see, he made me confirm his view, and those questions and answers, made—oh, how long ago!—here come up, to answer a recent question ahout rain. To make the matter plainer, we must recall a few things stated in former Talks. You know that if you place a saucer of water in the open air, the water will soon disappear.

What Becomes of the Water?

Some of you will say that "it evaporates," others that "it dries up," hoth meaning the same thing. The water is takeu up by the air, which remains as transparent as before; we can not see the water while it is mixed with the air, as it is an iuvisible vapor. Now I must ask you to turn to my Talk in January (page 26) where, in talking about Frost and Snow, I gave the important facts concerning

"The Moisture iu the Air."

If you begin at this heading, and read carefully down to "Falls in the Form of Snow,"—it will save me repeating it herc. As there stated, the amount of moistnre whieh the air can contain depends upon the temperature. For example, 160 pounds of air at the freezing point cau hold only one pound of water as vapor, while iu summer, wben the temperature is 86°, the air can hold four times as much vapor, i. e. 160 pounds of air can hold four pounds of water or $^1/_{40}$th of its weight. In January some simple methods are given to show when the air is moist or dry. When you have read a part of that "Talk" carefully, you will see that the amount of moisture or vapor the air can hold,

Depends Upon the Temperature,

and will understand that if the air at 86° can hold four times as much water as it can at 32°—if the warm air he snddenly cooled, it must let go, or deposit a part in some form, which may be as rain. But where does the vapor in the air come from? A glanee at the map of the world will show you that about three-fourths of the surface of the globe is covered by water; while there are large lakes, inland seas and rivers, the most of the water is in the great oceans. By the action of the sun, the change of water iuto invisible vapor is constantly going on from the ocean, just as from tbe saucer before mentioned, and the air becomes filled with all the vapor it ean take up. But as shown last month, the air is by no means quiet.

The Sun is Here at Work,

and air currents and winds are moving from place to place, from the ocean to the land and from a warm part of the earth to a cooler part. It is a well known fact that the higher we go from the surface of the earth, the cooler it is. It is not so warm several thousand feet nearer the sun, as it is at the earth's surface, and we know that mountains a few thousand fect high have their tops iu perpetual snow. One reason for this greater cold iu the upper regions, is, that the rays of the sun are only partly taken up hy the atmosphere, hut fall upon and heat the earth, which in turn warms the air in contact with it. If you think of the matter, you will see that the warm and moisture-laden currents of air, if they go up, will he cooled; if they go inland and strike the high mountains, they will be chilled, and in the general motion of the winds these warm and moist currents will meet with cold currents. Being cooled in these several ways in the warmer air, can no longer hold its vapor, which must be dropped as rain.

But Rain Comes from Clouds.

Before the invisible moisture comes down as rain (or snow) it first collects in a visible form, as fog, as we call it when near the earth, or as clouds when above us, but hoth, fog and clouds, are the same thing, differing only in position. In the formation of both, the invisible vapor of the atmosphere becomes visible. It is not well nnderstood in just what coudition the moisture is, when we can see it as fog, mist, or clouds; it has been called "water dust," and it has been supposed that the little particles of water are hollow, like soap-bubbles, but this is not proved. We only know that the moisture in the air is in such a state that we cau see it.

A SCENE SHOWING THE DIFFERENT KINDS OF CLOUDS.

Clouds Present a Variety of Form,

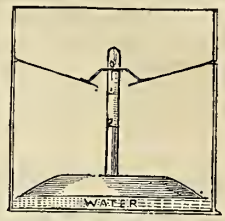
to which different names have been given. When no clouds of any kind are to be seen, the sky is said to be "clear," a condition which in our climate we are often glad to see. Yon must have lived, as I have, in a country where there are no clouds, except for a mouth or so in the year, to know how beautiful they are, and how tiresome a constautly clear sky becomes. You know that at times the sky is often flecked with light clouds, which appear to be very high up and stretcb in streaks of various forms across the sky. These arc called *Cirrus* clouds, a word which means "curl" and "curl cloud" is quite as good a name as "Mare's-tails," as the sailors call them. These are the highest of all clouds; while on very high mountains, one can see the other kinds of clouds below him, these "curl clouds" are still far above. It is supposed that they consist of frozen vapor, or minute snow flakes. In early morning, aud near sunset, the clouds are often seen low dowu and in straight lines. These are called *Stratus* clouds (from the Latin word meaning "to spread"). The most beautiful of all clouds is the Summer Day Cloud, the "*Cumulus*," as it is called (the same word in Latin means "a heap"). Those great billowy clouds are ever changing in outline, and on a summer's day you like to watch tbe changes and imagine they are like varions objects, and from them you build "castles iu the air." These are the three

Principal Forms of Clouds,

hut those who study the subject make several others from the combinations of these, hut we need not care about any other except the "Rain Cloud," or *Nimbus* (the Latiu word for "rain storm"), a dark low cloud whieh is often made up from two or more of the other forms. You know tbis cloud well, if not hy name, and when you see it you feel safe in saying: "it is going to rain." The engraving, fig. 1, shows these different forms of clouds; at the top tbe *Cirrus*, lower down the *Stratus* and *Cumulus*, and nearest to the earth of all is the *Nimbus* or rain cloud. Wben tbe couditions are sucb as to cause the vapor in tbe air to be deposited, it comes down in drops as rain. I can now say but little

As to the Rain Fall,

except that it varies greatly from local causes, from some districts in South America, where it never rains, to other countries on the same continent, where it rains the greater part of the year. It is said of the Straits of Magellan, that "it rains six days in the week, and is very cloudy on the seventh." The rain fall is measured by the depth of the water that falls on a level surface. If a tub or tank he exposed in an open place, where trees or huildings can not prevent any rain from falling into it, and the depth of the water tbus caught be carefully measured after each rain storm, it will show very fairly the amount of rain that has fallen, on a level, in that locality. Any contrivance for measuring the amount of rain that falls,



SECTION OF RAIN GAUGE.

Is Called A Rain Gauge.

There are many such instrumeuts, of wbicb the tub just mentioned is a simple form. Some rain-gauges are contrived to show a much closer measurement tban the one referred to. It will be of little use to describe the rain gauges intended for very accurate measurements, as they are only used at the government and other observatories, and could not be procured hy my young readers. Instead of so large a rain-gauge as a tub, any vessel, of tin, sheet iron, or copper, with straight sides and a foot or so across the top, will allow you to make a sufficiently accurate measurement.

Some Things to be Observed.

A vessel of this kind is a very simple instrument, but like the more complicated ones, its value depends much upon the observer. It has already been said that a rain-gauge must be placed where it will not he sheltered by buildings or trees, but be put where it will receive the full quantity of the rain. It should be looked at every morning, as there is often a sudden shower in the night. Every morning, make sure tbat the vessel is empty, so that the record for the day may be properly kept. In measuring the amount of water, it is best to use inches and tenths—most rules have the inches divided into eighths and sixteenths. You can make a measure from a strip of wood and divide each half inch into five parts with sufficient accuracy by the eye, if you can get no rule divided into 10ths to copy from. Mark your rule in lead-pencil, as ink will wash out. After a vessel like that described, in which the depth of water is measured with a rule, the next simplest is

A Rain Gauge with a Float.

An instrument of this kind is shown in section from a drawing sent us hy "M. H. M.," an engineer at Lawrence, Mass. The vessel is 12 inches across and the same in depth. A short distance below tbe top is a dishing cover which rests upon ledges upon the sides of the vessel and has a 2-inch hole in the middle. A float is used to measure the quantity of water; this may be of hollow metal, or of some light wood well varnished; it has a stem of sheet brass, half an inch wide, and this stem passes through a guide, which is seen over the hole in the cover. The brass stem is marked in inches and tenths, the reading beginning at and going down the stem. The Zero, or starting point on the scale, may be brought to the exact place on the guide, hy leaving a little water in the vessel. Of course, an inch of rain fall will raise the float one inch, and this will be shown by the figures upon the stem.

Telegraph Alphabet and Reading—Amusing Mistake.

It is singular that with all the improvements since introduced, almost the whole world now uses the simple original telegraphic alphabet, devised by Mr. Morse. For land lines, sounds or blows are used for dots (....) and dashes (— — —), and these are combined to represent letters. For long sea or submarine lines, movements of a delicate mirror are used. The electric current sent along the wires is so broken up as to cause a bit of iron to strike a quick or sharp blow, or a longer one. If the eye sees or the ear hears a quick click it is understood as a dot (.). If the iron as it comes down remains the smallest bit of time instead of flying up instantly, it is

understood as a dash (—). The ear soon learns to distinguish between *dot* blows and *dash* blows. Then the time between the blows is understood. Two blows close together (..) mean the letter *i*, but separate them a little (. .) and they mean *o*. Three sounds or dots if together (...) mean *s*, but if separated thus (.. .) they mean *c*, while if separated thus (. ..) they mean *r*. Dots and marks, or long and short clicks, are combined to produce various letters. (Two persons can secretly converse in company, across a room, by imitating these dots and marks with one finger upon the back of the other hand). The telegraph operator soon learns to understand the dot and mark sounds, in the dark, or with his eyes shut, just as easily as we understand the ordinary sonnds of the voice in speaking letters and words. Here is the Morse Alphabet as nsed by sounds or marks:

A .—	J —.—.	S ...	1 .— —.	0 ———
B —...	K —.—	T —	2 ..—..	Comma .—.—
C .. .	L ——	U ..—	3 ...—.	Period ..—..
D —..	M — —	V ...—	4 ....—	Interrogation —..—.
E .	N —.	W .— —	5 ———	Exclamatiou — — —.
F .—.	O . .	X .—..	6	Parentheses —...—
G — —.	P	Y	7 — —..	Quotation Marks
H	Q ..—.	Z	8 —....	.—.— .—.—
I ..	R . ..	&	9 —..—	

Note the difference between *i* and *o*; also between *s*, *c*, *r*; *a* and *n*, *b* and *v*, *d* and *u*, *g* and *w*, *h* and *y*, *l* and *t*, *q* aud *x*, 4 and 8, etc. In writing these marks, or making the sounds, some time or space is made between the letters, and more hetween words. Read the following:

.— — — . . ..— —. .— — —. . .. ..

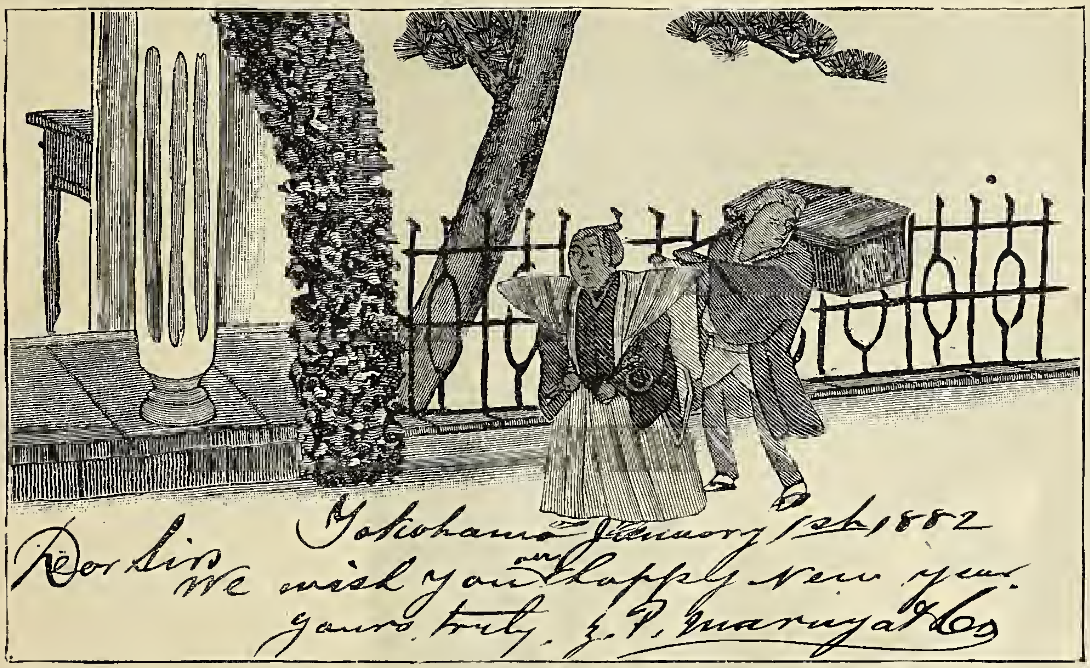
.. . ..— —— — ..— . .. . — —. .. ..

VERY AMUSING MISTAKE.—A gentleman at the seaside wrote to his wife who was detained at home hy an invalid mother, that he was feeling quite poorly. The next afternoon, having a sudden severe attack of some temporary ailment, perhaps indigestion, he asked his landlady to telegraph for his wife, which she did thus: "*Your husband is* BAD, (—... .— —..) *Come immediately!*"—The operators accidently sent a space between the second and third dots in the *b* of *bad*, so that it read —.. . .— —.. (d e a d). The disconsolate wife notified her friends. The local papers wrote obituary notices for their morning issues. Arrangements for funeral, etc., were hurriedly made, and on the early morning train the wife started with several friends, all clad in mourning, taking along a fine coffin or casket, lest a suitable one should not be found at the seaside. Arriving at the station, they engaged carriages and solemnly drove to her husband's boarding place. Imagine his feelings, as sitting on the veranda, fully recovered, he saw the eortege approach, bringing *his* coffin along!

A Postal Card from Japan.

Very few of our younger readers, or older ones even, fully understand and appreciate the wonderful extension of the present mail facilites, by means of the "Universal Postal Union." Only a few years ago, letters and newspapers passed the boundaries of nations with difficulty, and at a large expense when sent to distant points. With the beginning of 1882, abont the last country on the globe having an organized government came into the system, and most countries interchange Money Orders also. If you desire to send a few shillings or dollars to Australia or New Zealand, or if some one there wishes to send the same to you, the Postmaster will receive the money, give an order which will be cashed by Postmasters in the other country on the opposite side of the globe. A half-ounce letter with only a 5-cent stamp on it, if dropped into a city lamp-post box, or in a country post-office, even in the remotest territory, is carefully taken np, and by the most speedy conveyance delivered to any city, town or hamlet in almost any part of the world to which it is directed. A 2-cent Postal Card goes in the same way.

Ou Feb. 13th we received a Postal, addressed to the *American Agriculturist* Publishers, having on its face: "TOKIO, JAPAN, JAN. 20."—half round the world in 24 days!—On the left upper corner we read "*Union Postale Universelle, Carte Postale*," and on the right a beautiful engraved stamp, marked "B—2 Sn—EMPIRE DU JAPAN," with some Japanese printing between the corners which *we* can not read. On the back of this postal are some sketches in water colors, in blue, yellow, brown, red, etc. We give a fac simile of it, except the colors, and herewith beg to heartily reciprocate the kind wishes expressed, not only to the senders, but to extend the same to all our readers in Japan, of whom there is now a large number.



Our Puzzle Box.

NUMERICAL ENIGMA.

I am composed of 55 letters:
My 29, 4, 39, 6, 32 46, is a short jacket.
My 7, 18, 8, 13, means "willingly."
My 4, 19, 53, 43, 38, 22, 5, 27, means "begun."
My 24, 18, 6, 5, 50, is a poem to be sung.
My 37, 43, 46, 3, 33, is a cub.
My 42, 30, 8, 48, 11, is to turn round.
My 25, 30, 2, 51, 36, is a crowd of fishes.
My 21, 17, 35, 55, 16, is a switch.
My 12, 9, 28, 49, 51, 41, is a lighthouse.
My 47, 51, 20, 52, 48, is temporary fashion.
My 34, 27, 40, 44, 39, 28, 15,—pertaining to a league.
My 26, 31, 1, 14, 23, 53, 3, 44,—stem of a flower, and of the fruit of a plant.
My 53, 2, 20, 10, 45, 16,—having great force.
If the advice of my whole were more generally followed, the world would be happier.

CROSS WORD.

My first is in green, but not in black,
My next is in oats, hut not in stack,
My third is in gold, hut not in hrass,
My fourth is in silver. but not in glass,
My fifth is in gin, but not in beer,
My sixth is in gladness, bnt not in fear,
My seventh is in chicken, but not in fowl,
My eighth is in ostrich, but not in owl,
My ninth is in storm, but not in rain,
My whole we should—all of us—strive to gain.
W. J. K.

RIDDLE.

I've various homes; I'm in the sea,
The clouds, the woods, the streams,
In joys and sorrows, griefs and fears,
In sweet ideas and dreams.
In various hues you've seen me dressed,
But oftenest in black;
By me a dollar is increased,
I add to every stack.
I'm in yonr pockets, in your purse,
In your own house I stay,
And yet you surely will admit
I'm never in the way.

ANAGRAMS.

1. In nice stores.
2. I'm a peril.
3. To relate.
4. Dear Emil.
5. Under, in bog.
6. Dine late, Mr. T.
7. Ten ailments.
8. A deep rest.
9. Peep in, Mr. P. T.
10. Sure score.

DIAMOND.

1. Found in heart. 2. An article of clothing. 3. An animal. 4. A kind of drum. 5. A marine production. 6. A fish. 7. Found in the cellar. Perpendicular central: A noisy instrument.

CROSS-WORD ENIGMA.

My first is in gain, not in loss,
My second is in tree, not in moss,
My third is in new, not in old,
My fourth is in mint, not in gold,
My fifth is in urn, not in bowl,
My sixth is in dish, not in roll,
My seventh is in knife, not in plate,
My eighth is in soon, not in late,
My ninth is in make, not in buy,
My tenth is in wet, not in dry,
My eleventh is in line, not in book,
My twelfth is in roam, not in look,
My thirteenth is in night, not in day,
My fourteenth is in drab, not in gray,
My fifteenth is in low, not in high,
My sixteenth is in rope, not in sigh,
My seventeenth is in walk, not in ride,
My eighteenth is in thrive, not in slide,
My nineteenth is in time, not in hour,
My twentieth is in bread, not in flour,
My twenty-first is in sing, not in talk,
My twenty-second is in crow, not in hawk,
My twenty-third is in hedge, not in stalk,
My whole was a remark of Michael Angelo.
MRS. MAYO.

LETTER ENIGMA.

I am in the dress, but not the gown,
I am in the smile, but not the frown,
I am in the dish, but not the plate,
I am in the seat, hut not the gate,
I am in the side, but not the hand,
I am in the grass, but not the land,
I am in the sun, but not the light.
I am in the loose, but not the tight,
I am in the stare, but not the look,
I am in the stone, but not the brook,
I am in the mouse, but not the trap,
I am in the sound, but not the rap,
I am in the bush, but not the leaf,
I am in the sail, but not the reef,
I am in the case, but not the box,
I am in the stork, but not the fox,
I am in the fish, but not the goat,
I am in the sea, but not the boat.
MRS. MAYO.

ZIGZAG.

The letters indicated by stars, when read downwards, will name a flower.

ACROSS.—1. An animal. 2. Another animal. 3. Where the first animal is sometimes put. 4. What the second animal often chases. 5. A tree. 6. A larger animal than the first two. 7. An uncommon animal. 8. Upon what some animals travel. 9. A young animal. 10. What geese often are. 11. What all animals must do.

1.	*	.	.	7.	.	.	*
2.	.	*	.	8.	.	*	.
3.	.	.	*	9.	*	.	.
4.	.	*		10.	.	*	.
5.	*	.	.	11.	.	.	*
6.	.	*	.				

DECAPITATIONS.

(Behead the word which fills the first blank in the sentence, to fill the second blank.)

1. He banded a —— to the young —— and she broke it.
2. Then the mother came to the little —— aud lent her kindly ——.
3. The —— was killed by an ——.

Answers to Puzzles in the February Number.

NUMERICAL ENIGMAS.—1. Live and learn. 2. Unabridged dictionary.

PI.—The ancients always harnessed their horses abreast, never lengthwise.

EASY ONE-WORD REBUSES.—1. Apex. 2. Arose. 3. Arrogate. 4. Abridge. 5. Access (ax S). 6. Ajar. 7. Adore. 8. Afore. 9. Adduce.

DECAPITATIONS AND TRANSPOSITIONS.—1. Whale, hale. 2. Birch, rich. 3. Heel, eel. 4. Petal, plate. 5. Horse, rose. 6. Flea, leaf.

CROSS WORD.—Solitude.

DIAMOND.—4th C C C, Seize.

B
B A C
B A C C A
C C C
A

ANAGRAMS.—1. Automaton, 2. Calculates. 3. Beehives. 4. Bruised. 5. Treatment. 6. Shrewdness. 7. Magistrate. 8. Policeman. 9. Lamentations. 10. Passionate.

PUZZLES.—1. The vegetable kingdom. 2. Imitate a good man, hut never counterfeit him.

BLANK LOGOGRIPH.—*Easy*:—sea,—as,—say,—yes.

The Home Museum.

Many years ago I was asked to give a lecture in a country town; the house at which I was invited to stay, was that of a very intelligent and well-to-do farmer. I found that he had one room in his large house fitted up as a museum, and very interesting it was. There were stuffed birds from Africa and Australia, brought home by relatives who went to sea. There were minerals from California and elsewhere, and insects and other objects from afar off; but nothing from near home. At that time I also had collections, and among the most interesting things in it were some minerals from within a few miles of that very house! This gathering of things from far away and overlooking of

those close at hand, I have often thought of since. Far more interesting than the birds from Africa, would have been the birds of that farm; and no minerals from California, even if they contained gold, were half so beautiful as the varied forms that might have been collected near home. That visit to this farmer's collection gave me the idea of

Home or Farm Museums.

I think I said something of the matter several years ago, but have not mentioned it of late. Every farm has some room or loft in some building, where the youngsters—for it is a work for both boys and girls—can make a farm museum. "What shall we put in it," you will ask. In the first place, as the foundation of the farm, I would include specimens of every kind of rock found upon it. In some localities, there will be no rocks, but never mind that; take as the next thing, whatever grows naturally upon the soil. Specimens of the various wild plants and the wood of all the different kinds of trees. You may leave the birds until you get older; but the insects, injurious or otherwise, found upon the farm will make a most interesting collection. Suppose you, if living upon a wheat farm, could see at once, samples of all the different kinds of wheat that had been grown on it for the past 20 years, with the yield per acre given for each, would that not be more interesting than all the birds in all Africa? Begin now, and make a museum of all wild and cultivated products of the farm, and you will be surprised to see how it will grow, both in size and in interest. "THE DOCTOR."

A Basket of Cats and Kittens.

At first I was inclined to write you simply about one cat, and call the title of this article OUR CAT. There were some good reasons for doing this, but it looked too selfish. I know "our cat" better than any other cat in the wide world, and it is also a fact that this same cat thinks more of me than does any other "pussey" with which I have any acquaintance. I have known "our cat," since it was a very little kitten, and have spoken kind words to it for many a day, and held it in my lap when any other member of the Cat Family would have been left out in the cold. I like "our cat," because it is bright and quick—much more so than the ordinary cat. How much of this show of wisdom is due to its bringing up, I must leave others to judge. "Our Cat" does not talk, simply because no cat's tongue is so constructed that it can combine the sounds of human speech; but he is an attentive listener, and always tries to say something either of satisfaction or otherwise, when the proper time comes. There is not much music in "Our Cat," and he knows it, and exhibits his wisdom by not trying to be musical, and in this he puts to shame many human beings that are even less gifted in sweet sounds. "Tiger" had a terrible fright the other night. We have called him Tiger, in the first place, because his body is covered with black and white bands that very much resemble the stripes upon the back and sides of a tiger, and secondly because his disposition was so unlike that of a tiger—just as we are inclined to call many other things by the names of opposite qualities. But about the scare "Tiger" had. We left the cellar window open—one of those small windows that is on a level with the ground—and the other night while "Tiger" was in the celler a caller paid him a visit. I do not know as he owed him anything, but a visit was paid him. We found "Tiger" very much excited in the morning, so much so that he made his distress known by some of those peculiar noises that a cat can utter. They were not so loud as they were deep. The cellar door was opened, and "Tiger," though very glad to see the rest of the family, was not entirely inclined to leave the cellar. A search was made, and a large head, something like that belonging to a rat, only more pointed and several times larger, was seen sticking out of a pile of boards which stood near the cellar door. I am not going to tell you the name of this visitor, for when we brought him out into the yard he was so penitent, or ashamed, or what not, of what he had done that he became very sleepy, and one might have thought him dead. We left the caller to himself, and it was not long before he came to his senses and was seen trotting with his long, smooth tail behind him, over a hill on his way to the woods, where he, it may be, was scolded by his wife or mother for staying away from home.

"Tiger," in the meantime kept a safe distance from his visitor, and for some time had no desire to go into the cellar; indeed he is a little shy even to this day. What happened that night in that cellar will never be known. It is very certain, that had the window been lower my story would have been shorter.

I cannot tell you the many things that "Tiger" does, that we call "cute." His jumping through your arms when held as a hoop before him is amusing to all who see it for the first time. But age begins to tell upon him, and if his fat increases much more, I am afraid "Tiger" will not be the terror to rats that he now is, or make the whole household merry with his playful tricks as in the years that are past. Cats are said to have nine lives; if this is the truth, than we may hope to have "Tiger" with us for a long time.—Perhaps he is now passing into his second childhood, with seven more to come! and he will be like a kitten again.

The artist has furnished me a "basket of kittens," out of which to select a successor to "our cat," when "Tiger" shall be no more. Where it came from I will leave you to guess. It may be that it holds a lot of prize kittens from some "Royal Cat Show." It will be a difficult matter to make the choice from such a lively lot of kittens, but I will not be selfish, and you may pick out your favorite, and I will take the one that is left. If some one does not come pretty soon it seems to me there will not be any of the kittens left in the basket for any one. UNCLE HAL.

A MARKET BASKET FULL TO OVERFLOWING WITH KITTENS.

BEATTY INVESTIGATED.

The representatives of several prominent journals visited the new Piano and Organ factory of Daniel F. Beatty, at Washington, New Jersey, a few days since and thus speak of the enterprise:—"Leaving New York, foot of Barclay Street, a run of two hours brought us to the city made famous by its present Mayor, Hon. Daniel F. Beatty, who owns and controls the extensive and well organized factory where is manufactured his well-known pianos and organs. Our party was driven direct to the factory, where we, in a hurried manner, took a run through the new buildings devoted to the manufacture of Beatty's instruments. We could hardly realize that this indomitable man had within five months been burned out entire, and these immense structures had been erected and put in operation since and now turning out 30 musical instruments a day, which we were assured would be doubled in 30 days, and trebled in 90, for it must be remembered that the final finish on instruments in this new factory had but just begun. We listened to the music of the Beethoven Organ for nearly an hour. The instruments were taken at random from the lot, and we never heard better, sweeter toned reed organs than each proved to be, and it is yet a wonder to us how such a magnificent instrument, in appearance, in tone and in variety, can be made for anything like the money he asks for it. We can see how upon such a scale, selling direct to the consumer and having perfect organization, Mr. Beatty can outdo all competitors, but that they should be outdone to the extent they are is yet a mystery. If those who have spoken disparagingly of Mr. Beatty could take a look at these enormous works, common justice would demand retractions for all they ever said."

A correspondent of the "Country Gentleman" says of the "ACME" Pulverizing Harrow, Clod Crusher and Leveler:—"**** "An 'Acme' was offered "to me for trial on the condition that if it did not work well, "it was to be returned to the seller. We tried it and on "once going over the ground it accomplished the work of "both roller and harrow, and more perfectly fitted the surface to receive the seed, than both could have done. We "would not dispose of it for twice its cost. I have no interest in the manufacture or sale, of either of the Machines "I have named, but only speak of them for the benefit of "my fellow Farmers, that they may try it, because I think "that every farmer should have a knowledge of any tool "which may prove a public benefit.

Bonds.

The policy of the Government in making successive calls of bonds for redemption will render it necessary for many holders to reinvest, during the coming year, money now lying in safes and vaults in the form of old issues of bonds, which have ceased, or will soon cease, to bear interest.

Government Bonds can be obtained at our office in any amount, at market rates, with no charge for commission.

Banking.

We receive deposit accounts of parties in good standing; satisfactory references required from those not already known.

Interest allowed at 3 per cent. per annum on average monthly balances of $1,000 or over. No interest on accounts averaging less than $1,000.

Stocks.

We do a general commission business in Stocks and Bonds dealt in at the New York Stock Exchange, and other sound securities.

Especial attention given to orders by Mail and Telegraph from Banks, Bankers, and other institutions and from investors out of the city.

Our Memoranda of Government Bonds for 1882, containing valuable information on many subjects, can be obtained by all desiring to make investments, or to consult its pages for any purpose.

Fisk & Hatch,

5 Nassau St., N. Y.

CHILDRENS SHOES WEAR TWICE AS LONG with the beautiful

A.S.T.Co.

BLACK TIP UPON THEM. Ask your Shoeman for them.

THE WATERBURY WATCH is the cheapest reliable stem-winding watch for the price in the world. Since its introduction many improvements have been made, and the Company warrant every one a running watch, and do not send from the Factory any which have not been run at least six consecutive days in varying positions. Circulars free. Sent by mail registered for $3.65.
CUMMINGS & CO., 38 Dey St., N. Y.

THIRTY-SEVENTH ANNUAL REPORT
OF THE
New-York Life Insurance Co.
OFFICE, Nos. 346 and 348 BROADWAY.
JANUARY 1, 1882.

Amount of Net Cash Assets, January 1, 1881.....$41,344,120.85

REVENUE ACCOUNT.

Premiums	$8,438,684.07	
Less deferred premiums Jan. 1, 1881	387,972.13	—$8,050,711.94
Interest and rents, (including realized gains on real estate sold)	2,789,821.70	
Less interest accrued Jan. 1, 1881	357,167.37	—2,432,654.33—$10,483,366.27
		$51,827,487.12

DISBURSEMENT ACCOUNT.

Losses by death, including Reversionary additions to same	$2,013,203.32	
Endowments matured and discounted, including Reversionary additions to same	564,924.96	
Annuities, dividends, and returned premiums on cancelled policies	2,513,691.94	
Total Paid Policy-holders	$5,091,820.22.	
Taxes and re-insurances	224,772.24	
Commissions, brokerages, agency expenses and physicians' fees	1,001,027.59	
Office and law expenses, salaries, advertising, printing, &c	379,860.21	—$6,697,480.26
		$45,130,006.86

ASSETS.

Cash in bank, on hand, and in transit (since received)	$1,271,588.41	
Invested in United States, New York City and other stocks, (market value, $19,315,306.20)	17,216,531.42	
Real estate	4,486,506.62	
Bonds and mortgages, first lien on real estate, (buildings thereon insured for $16,940,000.00 and the policies assigned to the Company as additional collateral security)	18,215,030.73	
Temporary loans, (secured by stocks, market value, $2,883,577.50)	2,376,000.00	
* Loans on existing policies, (the reserve held by the Company on these policies amounts to $2,879,000.)	545,227.34	
* Quarterly and semi-annual premiums on existing policies, due subsequent to Jan. 1, 1882	452,161.00	
* Premiums on existing policies in course of transmission and collection (estimated reserve on these policies $300,000. included in liabilities)	227,032.97	
Agents' balances	48,673.57	
Accrued interest on investments Jan. 1, 1882	291,254.80	—$45,130,006.86
Excess of market value of securities over cost		$2,098,774.78

** A detailed schedule of these items will accompany the usual annual report filed with the Insurance Department of the State of New York.*

CASH ASSETS, Jan. 1, 1882..... $47,228,781.64

Appropriated as follows:

Adjusted losses, due subsequent to Jan. 1, 1882	$361,544.70
Reported losses, awaiting proof, &c	187,439.98
Matured endowments, due and unpaid, (claims not presented)	50,252.67
Annuities, due and unpaid (uncalled for)	2,965.35
Reserved for re-insurance on existing policies; participating insurance at 4 per cent. Carlisle net premium; non-participating at 5 per cent. Carlisle net premium	39,716,408.63
Reserved for contingent liabilities to Tontine Dividend Fund, over and above a 4 per cent. reserve on existing policies of that class	2,054,244.03
Reserved for premiums paid in advance	28,889.67
	$42,401,745.03

Divisible Surplus at 4 per cent..... 4,827,036.61

Estimated Surplus by the New York State Standard at 4½ per ct., over 10,000,000.00

From the undivided surplus of $4,827,036 the Board of Trustees has declared a Reversionary dividend to participating policies in proportion to their contribution to surplus, available on settlement of next annual premium.

During the year 9,941 policies have been issued, insuring $32,374,281.

Number of Policies in force	Jan. 1, 1878, 45,605. Jan. 1, 1879, 45,005. Jan. 1, 1880, 45,705. Jan. 1, 1881, 48,548. Jan. 1, 1882, 53,927.	Amount at risk	Jan. 1, 1878, $127,901,887. Jan. 1, 1879, 125,232,144. Jan. 1, 1880, 127,417,763. Jan. 1, 1881, 135,726,916. Jan. 1, 1882, 151,760,824.
Death-claims paid	1877, $1,638,128. 1878, 1,687,676. 1879, 1,569,854. 1880, 1,731,721. 1881, 2,013,203.	Income from Interest	1877, $1,867,457. 1878, 1,948,665. 1879, 2,033,650. 1880, 2,317,889. 1881, 2,432,654.	Divisible Surplus at 4 per cent.	Jan. 1, 1878, $2,664,144. Jan. 1, 1879, 2,811,436. Jan. 1, 1880, 3,120,371. Jan. 1, 1881, 4,295,096. Jan. 1, 1882, 4,827,036.

TRUSTEES:

MORRIS FRANKLIN,	DAVID DOWS,	CHAS. WRIGHT, M. D.,
WM. H. APPLETON,	GEORGE A. OSGOOD,	EDWARD MARTIN,
WILLIAM BARTON,	HENRY BOWERS,	JOHN MAIRS,
WILLIAM A. BOOTH,	LOOMIS L. WHITE,	HENRY TUCK, M. D.,
H. B. CLAFLIN,	ROBERT B. COLLINS,	ALEX. STUDWELL,
JOHN M. FURMAN,	S. S. FISHER,	R. SUYDAM GRANT,
	WILLIAM H. BEERS.	

THEODORE M. BANTA, Cashier.
D. O'DELL, Superintendent of Agencies.
CHARLES WRIGHT, M. D., HENRY TUCK, M. D., Medical Examiners.

MORRIS FRANKLIN, President.
WILLIAM H. BEERS, Vice-President and Actuary.

MULLER'S NORWEGIAN COD-LIVER OIL
Cheapest and Best

Superior to any. Highest medical authorities testify to its delicacy of taste and smell. For sale by Druggists.
W. H. Schieffelin & Co. (*Wholesale Agts. U. S. & Canada*) N. Y.

THE RAHN Natural Inclined Hedge Fence. Costs only 15 cents per rod, turns any stock in 3 to 4 years, has no base sprouts, no roots at the surface, no brush to handle. Pat'd Nov. 1, 1881. Address with stamp,
S. K. RAHN, West Elkton, Ohio.

It is a remarkable fact that you can swallow any quantity of **L. E. RANSOM'S BUTTER COLOR** and the effect will not be different than from eating the same quantity of Butter. No farmer should neglect to use so harmless a color.

B. K. BLISS & SONS' SELECT GARDEN SEEDS

BLISS' AMERICAN WONDER PEA.

Extra Early. Very Productive. Requires no Bushing. Exquisite Flavor.

Dr. Thurber, Editor of *American Agriculturist*, after two years' trial says: "Messrs. B. K. Bliss & Sons deserve the congratulation of the whole gardening community for having introduced so excellent a variety of this popular vegetable."

From **Rev. Henry Ward Beecher,** July 14, 1881.—"Your Peas are wonderful, none others so good. I do not mean to plant another year any others, early or late. They beat the Alpha in earliness and out of sight in flavor."

From **Hon. Marshall P. Wilder,** *Pres. American Pomological Society, Ex.-Pres. U. S. Agricultural Society,* June 30, 1881.—My AMERICAN WONDER *is a wonder*, equal in sweetness and richness to the Champion of England, which is all that could be desired."

So says in substance every one who has tested it. We have yet to hear the first complaint from any one who has planted the genuine variety obtained from us.

CAUTION.—As there is another Pea in the market called "American Wonder," be sure and call for "BLISS' AMERICAN WONDER," and receive no other.

PRICES.—One-third pint package, 20 cents; pint, 55 cents; quart, $1.00; by mail, post-paid. When delivered at our store, or sent by express at the expense of the purchaser: One pint 40 cents; one quart, 75 cents; one peck, $5.25.

Prices for larger quantities upon application.

Circulars giving a full description mailed to all applicants.

Pringle's New Hybridized Excelsior-Hulless Oats.

A hybrid between the Chinese Hulless and the well-known Excelsior, and much more productive than either. For further particulars see our **Illustrated List of Novelties,** sent free to all applicants.

Price:—By mail, one pound, 60 cents; three pounds, $1.50. By express, at expense of purchaser, $2.50 per peck; $7 per bushel of 32 lbs.

NEW EARLY TOBACCO, GENERAL GRANT.

The earliest Tobacco in cultivation, particularly adapted for growing in the Northern States. Last summer it produced leaves 44 inches in length, of proportionate breadth, and matured its crop perfectly, as far north as Duluth, Minnesota. The leaf has extremely small veins, is of the finest possible texture, and very elastic. One of the best judges of Tobacco in New York city pronounces it an exceedingly promising variety, and an old Connecticut Valley grower says it is the choicest as well as the earliest sort he has seen. Directions for cultivation and curing sent with each packet. Price, 25 cents per packet; 5 packets, $1.00.

ESTABLISHED 1845.

300 BEAUTIFUL ILLUSTRATIONS,

With a richly colored plate of a Group of Pansies, and a descriptive priced list of 2,000 varieties of FLOWER and VEGETABLE seeds—with much useful information upon their culture—150 pages—mailed to all applicants enclosing 6 cts. to pay postage.

THE AMERICAN GARDEN,

a beautifully illustrated monthly, devoted exclusively to Horticulture, the Flower, Vegetable, and Fruit Garden, Lawn, Conservatory, etc., with "Seasonable Hints," for each department in each number. $1.00 per year; sample copy free. Purchasers of Seeds to the amount of $4.00 in one order, at Catalogue prices, will receive THE AMERICAN GARDEN for 1882 **Free.**

New Varieties Potatoes.

VERMONT CHAMPION,
BROWNELL'S BEST,
EARLY HOUSEHOLD.

Varieties of 1881.

EXTRA EARLY PEACH BLOW,
ADIRONDAC, WHITE STAR,
AMERICAN MAGNUM BONUM,
QUEEN OF THE VALLEY,
AMERICAN GIANT.

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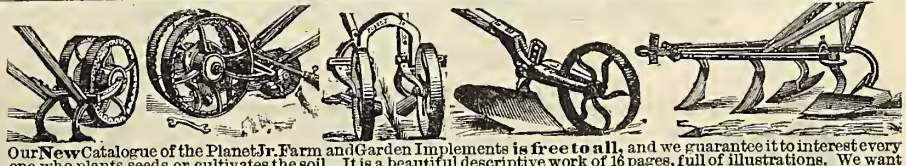

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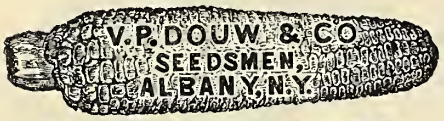

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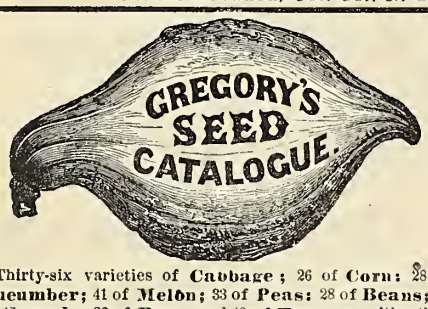

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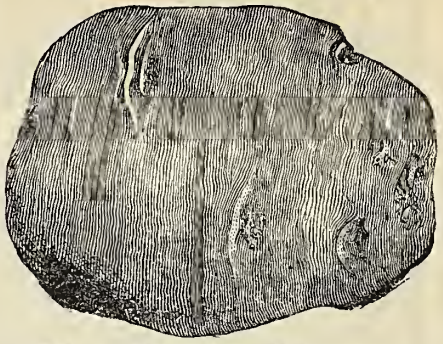

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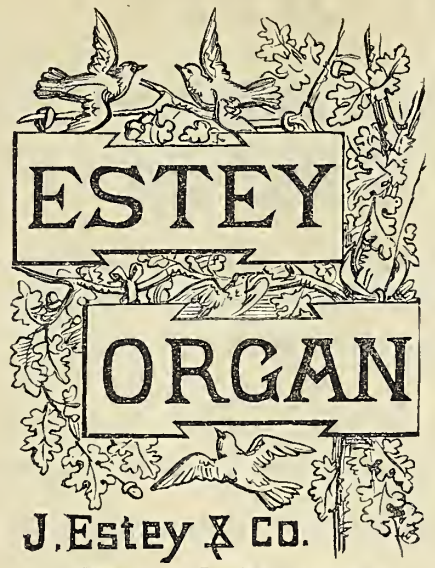

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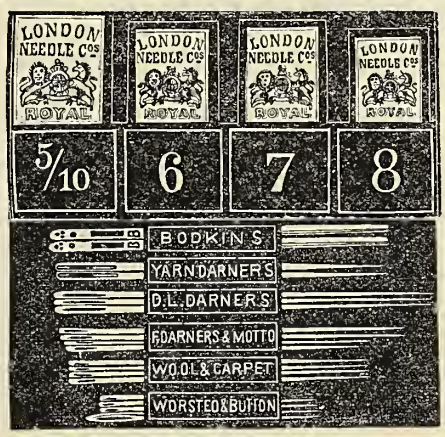

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The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in a German Edition. It is the chief and best German Journal of its kind issued in this country. Our friends can do good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language. Those who employ Germans will find that Edition a most *useful* and acceptable present.

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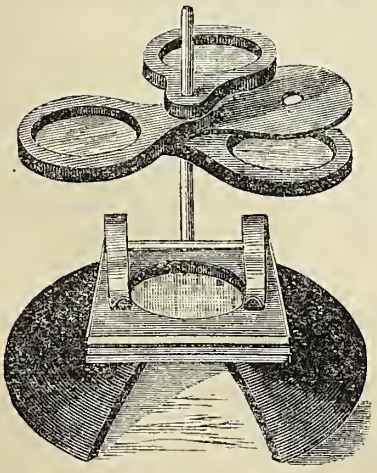

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Public School Children—Striking Figures.

We fully believe in providing school privileges at public expense, for every child in the United States. The people are the sovereign rulers, and no one unable to read, write, and add, subtract, multiply and divide, can intelligently *rule* either himself or others. Whatever may be the abstract right, or the expediency, it seems an absurdity for a man to cast a ballot which he can not read, or to vote for measures or laws which would be utterly incomprehensible to him if only written and placed before him. But this by the way.—We were just examining statistics for 1881 by Hon. Neil Gilmour, Superintendent of Public Instruction for New York State. He reports over one million attendants at the Public Schools during the year (1,021,282). Turning to the February *American Agriculturist*, page 46, we see that the children in the Public Schools in New York outnumber the entire population in each of nineteen States, or in exactly half the States in the Union!

To supply this education the people of one State cheerfully paid out nearly eleven million dollars during the year, besides expenses for academies and normal schools, and other large sums for private schools, seminaries, colleges, etc. And during the past thirty years some two hundred and fifty million dollars have been expended for the same purpose, while in only ten years past over sixteen million dollars have been expended on school buildings

One-fiftieth of the entire population of the United States attended the Public Schools of New York during 1881. Notwithstanding the constant influx of the ignorant population from other lands, nearly 97 persons in every 100 in New York State, over ten years of age, can read, and nearly 96 in every 100 can also write. Again, the teachers in 30,826 Public Schools in the single State of New York outnumbered the entire United States army, officers and men included! We give these figures from a single State, as a striking illustration. Some other States make even a better showing, in proportion to the population. Who shall say that we are not an intelligent people, or at least trying to become so?

Since putting the above in type, we have gleaned the following: In 1879, there were 272,685 teachers in the Public Schools of the United States, or more than *ten teachers* to *one soldier* in our regular army (a capital example to the governments of Europe), and an aggregate expenditure of over seventy-eight million dollars, though, unfortunately, this was only about one dollar for each seven dollars expended for liquors—to say nothing of tobacco! Then, besides the great number of Academies, Seminaries, and Private Schools, there were 364 Universities and Colleges, having 4,241 instructors, and 60,072 students. But, per contra, of the fifteen millions of school age, that is, four to twenty years old, only about nine and a half millions, or not quite two-thirds, were enrolled in the public schools; but of those last, however, about two-fifths attended other schools.

Cotton Seed and Sunflower Seed Meal.—"E. D. R.," Sullivan Co., Pa., having seen it stated that Sunflower-seed meal is nearly as valuable a food as Cotton-seed meal, asks if where wood ashes are plenty it would not pay to raise sunflower seed for stock in preference to buying cotton-seed meal. We should say decidedly not, for without reference to the intrinsic value of the two, cotton-seed meal is a secondary or by-product. So far as we are aware, there is not much demand for sunflower seeds for pressing, and if raised solely for feeding, would cost vastly more than the cotton-seed, which, until recently, was nearly a waste material.

What is the Farmer's Grape? asks "G. F. T."—Fifteen or twenty years ago, we answered, "The Concord." And taking a view of the matter at present, and well aware that there are vastly better grapes we still say that, considering the fact that the question is proposed without reference to locality, or the circumstances, the soil, the experience of the planter, or the care that will be given, we still answer, the "Concord."

Waterproof Boots.—A correspondent of "The Garden" (Eng.), states that the best application for rendering boots waterproof, is the fat of fowls, or, as we should say, "chicken fat." (In England one can not get "roast chicken," but "roast fowl" is abundant). The fat is saved when the fowls are dressed, melted, and applied to the leather as needed.

Sorghum in New Jersey.—The 18th Bulletin, issued by Professor Geo. H. Cook, Director of the New Jersey Agricultural Experiment Station, is full of interest, not only to residents of that State, but to those of neighboring States. It comes too late for us to make extracts from it, and it is sufficient to say, that the results, in a most unfavorable season, show that, under proper conditions, Sorghum may be profitable. The chief "condition" being that there shall be in each Sorghum growing neighborhood, a mill to work up the cane. The idea that every farmer can convert his own cane into sugar and syrup, must be abandoned before Sorghum culture can take its proper place in our agriculture.

The Distance for Blackberries.—"R. S. T."—It depends upon the soil and variety. In our own light, sandy land, six feet each way. But as we have seen Mr. Roe's success with much closer planting, we are convinced that, on heavy land like his, he is right in making his rows six feet apart, and setting his plants every three feet in the row. He keeps his plants cut back to four or five feet, and the sight of his bushy hedge-like rows, when loaded with fruit, show that this closer planting is best for similar soils.

Artichokes.—"J. G. R.," Oldfield, Ont. Probably hogs can be furnished with food more cheaply by means of a crop of artichokes than in any other manner. Farmers in the Western States estimate that 40 head of hogs and their pigs can be kept for four or five months upon the produce of an acre in artichokes. The kind with short, round tubers, called "The Brazilian," is regarded the most productive.

That Million of Postage Stamps.—"P. P.," Ponghkeepsie, N. Y. This stamp matter has been revived every now and then for the past fifteen years, with variations. At one time a young lady could be relieved from trouble by them, and at another, a large price would be paid for the million of old postage stamps. The thing is all a hoax. If the stamps could be cleared of the gum upon them, they would be worth the price of any other old paper. The thing started years ago in England, and at first excited considerable interest.

Seeds of Osage Orange.—"J. G. L.," Juniata County, Pa. To get out the seeds, stack up the balls where they will be exposed to the weather and freeze and thaw. When mild weather comes, pound them in a tub or barrel, and wash away the pulp or refuse by frequent waters; the heavy seed will sink to the bottom. To prepare for sowing, pour scalding water over the seed and pour off when cold; then keep the seed moist and covered, in a warm place, until they begin to show minute sprouts, when they should be sown.

Worms in a Well.—"S." Pittston, Pa., is troubled in summer by angle-worms which get into his well and render the water unfit for use. He has filled in around the well to the depth of two feet with coal-ashes and cinders, and there is no crevice near the surface through which they can enter. Worms go much deeper in the ground than is generally supposed. In a dry time they go down until they come to permanently moist earth, and this is sometimes six feet or more. We should think that placing the protecting layer of coal ashes much lower than it is at present would prove a remedy. Who has had experience in this matter?

How Much Lime? asks "A. B. C.," Tecumseh, Mich. The amount of lime to the acre depends so much upon the condition of the soil, as to vegetable matter, that no rule can be given. From 30 to 150 bushels per acre are used, and sometimes much more has been applied with benefit. Experiment can alone determine the quantity best to apply to your land.

Packing Butter to Keep.—"J. J. L.," Md. It is asserted by experienced dairymen that the butter of some breeds of cows can not be made to keep. The buttermilk must be thoroughly worked out, and only the purest salt used; much depends upon this. The head of the tub should not touch the butter, which is to be covered with a new cloth dipped in strong brine. Keep the butter in a cool place.

Plaster and Lime.—"J. J. L.," Crisfield, Md. Plaster is often applied to clover with beneficial results, while on some soils it produces no apparent benefit. Experiment only can determine whether it will be of use in your case. The usual quantity is two to four bushels per acre, the smaller quantity on light soils. The question whether ground shells will answer as well as burned shells has been answered recently in an article on Lime and Limestone. There is the same difference between burned and unburned shells as between lime and ground limestone.

Ants in the Closet.—"B. W." The best ant-trap we have tried is an ordinary dinner plate, the interior of which, all below the flaring rim, was smeared with lard. Lay cards or a few sticks from the shelf to the edge of the plate, to afford a bridge upon which the insects can pass up to the inside of the plate, and reach the lard, of which they are very fond. Of course this trap will only succeed where the temperature will keep the lard soft and adhesive. From time to time scald out the plates, apply fresh lard, and set them anew.

Rough Rice for Poultry.—"Mrs. A. M. D.," Springfield, Ga. Rice is almost pure starch, and we should prefer to use it for fattening rather than for laying fowls. It is desirable to give laying fowls a variety of food, and rice may form a part of their rations. Buckwheat, oats, and corn are all good, but neither should be fed exclusively long at a time. If the fowls are shut up and can not get insects, give animal food of some kind, scraps of fresh meat, and shells or ground bone. Moreover, do not forget fresh vegetables; cabbages are excellent; give them the outer leaves and stumps, and all parings and refuse of other vegetables.

Concrete Wall.—"A. J. B.," Allegan, Mich. You can build a very serviceable foundation wall by using stones in the concrete instead of gravel.

Royalty on a Hay Rack.—"B. N. C.," Bethel, Me. It is very difficult to advise in such cases. Every right-minded man, if he has unintentionally infringed upon the rights of others, will be ready to make amends. On the other hand, the one who claims that he has suffered, if his claim is just, will be easily settled with. But there are chaps who go about the country claiming royalty on all sorts of devices that have long been in common use. Such are swindlers, and their claims should be resisted. There are a few things to be observed in such cases. A suit for infringement can only be brought in a U. S. District Court, and there will be abundant time to send to the Patent Office at Washington for a copy of the alleged patent and its date. If the claimant is in the right, he will agree to this. If he objects, it is an indication that his claim is not just. Cases of this kind show the need of a Farmers' Club in every neighborhood, where such matters can be properly considered, and farmers can act in concert for their mutual benefit and protection.

Temperature at Which Seeds Germinate.—"J. W. C.," Olney, Ill., names a dozen grasses and grains, and asks the lowest temperature at which the seeds of each will germinate. We can not answer in each case, and doubt if it has been ascertained. In practice, plants are divided into two classes—hardy and tender. In Mr. O's list, all except Indian corn, and perhaps Hungarian grass, belong to the hardy plants; these germinate when the average temperature is 45°, while the tender plants require a temperature of 60°. Any other than this general division has no practical value.

Are Gooseberries Profitable?—"C. R. S."—The answer may be yes or no, according to circumstances. Green gooseberries are often profitable, ripe ones, rarely. It will not pay to grow gooseberries to send to a great distance. If you are near a market, especially if near a factory town, where many people of European birth are employed, they will probably pay, if three conditions are observed: 1st, plant only American varieties, such as "Houghton," "Downing," etc.; 2d, meet the caterpillar, and promptly conquer it with Hellebore; 3d, make sure of the needed help at picking time. With the English varieties here failure will follow.

Hulled Corn.—"C. A. B.," Philadelphia. This old-fashioned preparation of corn is made by removing the thin hull with ley. One recipe directs shelling a dozen ears (a white flint variety the best) and putting the kernels in an iron kettle and covering them with water. Two teacupfuls of good, unleached wood ashes are tied up in a cloth and put in with the corn, which is to be boiled for an hour or more. Then pour off the ley, removing the bag of ashes. Add fresh water and simmer until the corn swells up. The hulls usually come off without difficulty in the stirring; if they do not, turn off the water and rub the corn in a towel. The simmering should be continued until the corn becomes soft all through. In the absence of wood ashes, a small lump of potash or soda ash may be used. After the hulls are loosened, the water in which the corn is boiled should be repeatedly changed until no alkaline taste remains.

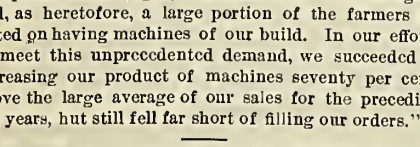
Time to Set Raspberries.—"S. T. C."—The canes which are to grow and bear fruit the second year, come from buds that start below ground, and commence their growth very early in spring. When the shoots first start they are exceedingly tender, and are liable to be broken in handling and in transportation. For this reason we have advised planting in autumn. But it is better to plant the coming spring than to wait for next fall, and the earlier in the season it can be done, the better. The only use of the piece of old cane given by nurserymen with the root is as a handle in planting. The useful growth comes from the underground shoots.

Publisher's Department.

Insurance Wreckers.—Both branches of the Legislature of New York, have appointed Committees to investigate the management of Life Insurance Companies. This work of investigation has not begun a moment too soon. Unquestionably, there are different gangs of men banded together to wreck Life Insurance Companies. There are, furthermore, officials connected with Life Insurance Companies bordering upon insolvency, who pay themselves outrageous salaries, and who are systematically endeavoring to freeze out the holders of policies, by appealing to their fears. There are a few Life Insurance Companies, however, which may be said to be absolutely safe from all designing and unscrupulous manipulations; companies whose large assets place them outside of the range of danger. One of those is the "Mutual Life," mentioned last month. Another which we warmly commend to the confidence of our readers is the "New York Life," of which Morris Franklin is President. The cash assets of the New York Life Insurance Company on the 1st of January, were $47,228,781.64. The head of every family should make provisions against misfortunes which may follow death, and take out a policy in a sound Company.

Adriance and Adriance Buckeye Mower and Reaper.—We are gratified at learning from a circular sent us by Adriance, Platt & Co., manufacturers of the Buckeye Mower and Reaper, that they have had a year of most unusual prosperity. They write: "The season of 1881 was the most favorable for the sale of Mowers and Reapers that has been known for several years, throughout all the States supplied by us (with the exception of Michigan, which suffered from drought), and, as heretofore, a large portion of the farmers insisted on having machines of our build. In our efforts to meet this unprecedented demand, we succeeded in increasing our product of machines seventy per cent. above the large average of our sales for the preceding ten years, but still fell far short of filling our orders."

Plantation and Other Saw Mills.—Yankee inventors and manufacturers are by no means to have the monopoly in producing farm machinery. One indication of this is seen in a saw mill, especially adapted to plantation use, made at Salem, N. C. Much of the natural wealth of some of the Southern States is in its forests, but this is often unavailable on account of the difficulty and expense of conveying the timber to a saw-mill. When Mr. C. A. Hege set himself at the task of



producing a saw-mill that could be run by moderate steam or water-power, and produced one so readily managed and so perfect in all its arrangements as the one now manufactured, he made an important contribution to the prosperity of the Southern States. Of course large mills are required for those who make sawing a business, but the same mill, made especially for private use by farmers and planters, is of even greater general benefit. An examination of the very full illustrations of the devices for its almost automatic working, shows that much thought has been given to the invention, and the great number of testimonials from those who have the mill in use, show that there was an extended demand for such a machine.

The Eclipse Wagon Jack.—A trial of this Jack shows it to be a most useful affair. A great amount of ingenuity has been expended upon these implements, but among the scores of styles in use none can be simpler or more effective, while its price is remarkably low.

Lamp Wick with Metal Tip.—This is a simple device, by which a flat wick is terminated by a metallic tip. As our own lamps all have circular wicks, we have not been able to make a trial of it, but the inventor presents testimony from well-known people to the effect that the use of this wick adds greatly to the excellence of the light.

Messrs. Fisk & Hatch, New York, have published a pamphlet concerning Government Bonds (United States and Foreign) for the information of investors, with directions for buying and selling securities in the New York market. The work likewise contains statistics of the growth and progress of the United States, together with a compendium of the Tenth Census, and gold and silver statistics. We have watched with not a little interest the steady progress of Messrs. Fisk & Hatch since they, as young men, began their financial career in New York at about the beginning of the war. We congratulate them upon the increasing prosperity to which they have attained since the temporary drawback following the panic of 1873.

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New Arrangement. Interesting Announcement.

The American Express Company announces that it will now receive at any of its **4,000** offices, small sums of money, in any amount up to $10, and give a receipt for it which will be payable at any of its leading offices, including the leading cities and towns in Maine, New Hampshire, Vermont, Massachusetts, New York (9 stations in New York City), New Jersey, Pennsylvania, Ohio, Indiana, Illinois, Michigan, Kentucky, Wisconsin, Minnesota, Iowa, Missouri, Kansas, Neb. and Dak.

The safe delivery is guaranteed; orders are issued and paid at all hours of the day when the offices are open. The charge for receiving the money, issuing orders, and paying them, is **five cents** on $5, and all less sums, and **eight cents** on all sums over $5, and not over $10.

This will be a great convenience to all who reside near the offices of this Company, over 4,000, and extending over 31,000 miles of railroads.

Fodder-Corn—Green, Dry, and as Ensilage.—Two important questions are discussed in the last bulletin of the New Jersey Experiment Station, viz: Is the loss of food by fermentation greater or less in the stack than in the silo? Is ensilage of greater value than dry corn-fodder for the production of milk?—The conclusions of the extended experiments are as follows: "First. When the green corn was dried in stacks, the loss of food was less than it was when the corn was packed in a silo.—Second. When dried corn-fodder was cut and crushed, it was eaten by the cows under experiment quite as readily and with as little waste as ensilage.—Third. In three cases the yield of milk was not increased when ensilage was substituted for dried corn, but in one case ensilage caused an increase of eighty-seven pounds of milk in forty days.—Fourth. In the mixed milk for twenty days of herd No 1, ensilage caused no increase in the yield of total solid matter; while in the milk of herd No. 2, for the same period, it caused a gain of eight and one-third pounds, or seven per cent."

Population of the World—Latest Estimate.—The eminent statisticians, Behm and Wagner, estimate the present population of the world:

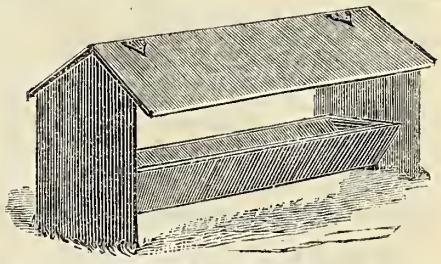
Asia	834,707,000	Australia and Polynesia	431,000
Europe	315,929,000	Polar Regions	82,000
Africa	205,679,000	**Total**	**1,452,233,000**
America	95,405,000		

Of the 95,405,000 in America, there are credited to the United States, 50,000,000; to Brazil, 11,100,000; to Mexico, 9,485,000; to British North America, 3,800,000.—Iceland is given 72,000, and Greenland, 10,000.

Clearing Land by Blasting.—"T. B. C.," Shiloh Hill, Ill., will find in the *American Agriculturist* for Jan., 1877, an illustrated article explaining the use of Dynamite or "Giant Powder," for clearing land. This article described what we saw on a farm in Bergen Co., N. J. Since then we have used the same explosive for removing both rocks and stumps, in making a road upon our own place. The article used is dangerous, but not so much so as gunpowder, as ordinarily used in blasting. A person who can not be trusted with a shot-gun or a revolver, should have nothing to do with this, or any other kind of blasting. Those only who know the danger of such things should be trusted with them. Under proper safe-guards, this is a most effective method of disposing of stumps. Those interested can refer to the above number (Vol. XXXVI, No. 1), as the description is too long to repeat here.

Sunflowers Again.—When we receive a number of inquiries upon an unusual subject, we can generally trace the reason to some sensational article. But we have not yet learned what has started the large number of letters now coming in, and the unusual interest in the sunflower—its seeds for feeding, and its stalks for fuel. Last month, p. 127, we gave a summary of the matter. As later letters refer to feeding the seeds to swine, it would appear that they have been recommended for that purpose in some publication. We can only say that we know of no such experiments, but judging from the results of feeding other oily seeds, we should not expect an exclusive diet of sunflower seeds, or one composed largely of them, would make the best kind of pork.

A Feeding Trough for Fowls.—Mr. "L. S. L.," Boone Co., Ill., writes us: I have noticed many illustrations of practical articles in the *American Agriculturist* from time to time, and to reciprocate the favors, I send the measurements and method of construction of a feeding trough for fowls. I had some trouble in getting the best proportions for the parts to send, but am satisfied with the following: Length of trough 4 feet; end-pieces 12 inches wide, 13 inches long at the highest point, and 10 inches on the sides. The trough rests on cleats nailed upon the lower end of the end-pieces. The boards for cover, are 4½ feet long, 7 inches wide. One of the two cover boards is nailed to the upper slanting



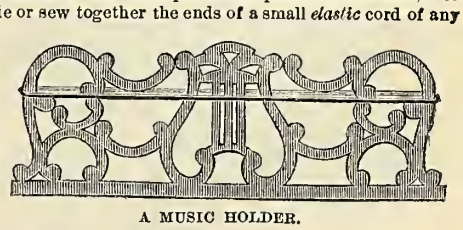
CHICKEN FEED TROUGH.

edges of the end-pieces, and the other is secured by strap hinges, as shown in the engraving. This lid makes it easy to reach the trough when feeding the fowls.

Trouble Among Dogs.—"W. B.," El Dorado, Ohio, and others, have recently written to us, that their dogs suffer from an intolerable itching, that the hair begins to come off, and that the skin is red and scaly All these point to some form of Mange, which, like Itch in man, and Scab in sheep, is due to a parasitic insect which burrows in the skin. In mild forms of Mange the use of Sulphur Ointment—as much sulphur as can be rubbed into a small quantity of lard—will cure in a few applications, with a thorough washing with warm soap suds before each. When the disease is very bad it is advised to use about a fourth of mercurial ointment with that of sulphur.

The Economy of a Horse-Blanket.—Our correspondent, Timothy Bunker, Esq., writes us: Jake Frink's horse has come out this spring, looking rather thin and rough. It is putting it mild to say that the hair does not all point one way. It is nothing unusual in the occupant of Jake's stable; in fact, a smooth-skinned horse would disappoint all his neighbors. We all know that a blanketed horse looks better and sells better, than an animal that is neglected, and some suppose the chief use of a horse-blanket is to gratify the pride of life, rather than to comfort the horse, and to add to his usefulness. It pays in dollars and cents to use a blanket. It saves feed. The same arguments that make a warm stable economical, call for a blanket. It retains the animal heat in cold weather, and this is favorable to sound sleep and good digestion. When at work in the field, or driven on the road, the horse becomes heated, and is as liable to take cold in cooling off, as a man in like circumstances. It is a great safeguard after a drive, to regulate the cooling process with a blanket. Horse-blankets are now manufactured so cheaply, that every farmer can invest in them and make money.

Holding Music Books Open.—A very simple but effective and convenient method of holding bound music or note books open on the piano or melodeon, is to tie or sew together the ends of a small *elastic* cord of any



A MUSIC HOLDER.

size, strength, and length. Put it around the rack and over or across the open leaves of the book, moving it up or down so as not to interfere with the notes or words. If suitably elastic, it is easily thrown on or off, and lifted in turning the leaves.

Forestry and the Census.—Gen'l Walker, Superintendent of Census of 1880, has shown his remarkable fitness for his position in his selection of the heads of special departments. When he put Forestry in the hands of Prof. Chas. S. Sargent, Director of the Arnold Arboretum of Harvard University, all familiar with such matters felt that it was an appointment eminently "fit to be made." Though the final report on the Forestry of the Census cannot be completed for some time to come, the Bulletins thus far issued in-

dicate the character and thoroughness of the work. Figures are, to the majority of persons, dull reading, while maps, pictures and diagrams that allow the eye to take in the subject at a glance are far more useful—a fact recognized in making these Forestry Bulletins. Taking up at random the Bulletin for Minnesota No. 5, we have a neat map of the State, plainly showing each county, etc. By marks or "signs," but mostly by colors, are indicated for the counties respectively; the amount of hard wood, the standing pine, the mixed pine, and hard wood, of pine already cut, the birch lands, etc. This map tells the story so completely that few explanatory words and figures are needed, and these are given on a page opposite the map. As a similar map is made for each timber-producing State, it will be seen what a vast work has been done in this Department of the Census, and in what a practical manner its results are presented. A glance at these Bulletins, issued far in advance of the final report, shows with startling distinctness the small supply of timber left to meet the future, and constantly increasing demands, and gives marked emphasis to our frequent advice to plant forest trees as a profitable investment.

The **only** machine that received an award on both Horse-power and Thresher and Cleaner, at the Centennial Exhibition; was awarded the two last **Gold Medals** given by the New York State Agricultural Society on Horse-powers and Threshers; and is the **only** Thresher selected from the vast number built in the United States, for illustration and description in "Appleton's Cyclopedia of Applied Mechanics," recently published, thus adopting it as the **standard** machine of this country. Catalogue sent free. Address

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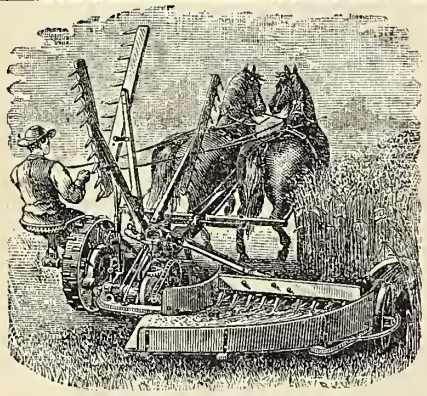

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ENGLEWOOD, N. J., March 1, 1882.

H. W. Johns M'f'g Co., New York.

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Yours truly, WILLIAM B. DANA.—[*Adv.*]

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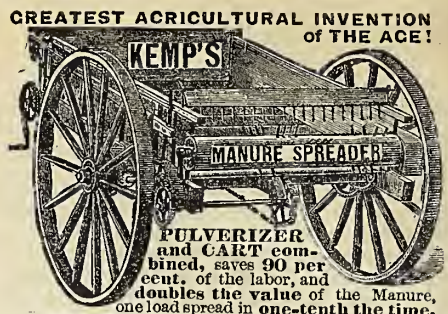

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Our Farmer's Favorite.—The finest Golden Dent in the world. Best for poor light lands. Has matured with us in ninety days. Peck, $1.00; bushel, $3.00; 10 bushels, $25.00. **Parrish White.**—The best white: deepest grain: 100 bushels and over per acre. Award the first prize whenever exhibited. Has no equal in the country. One lb., 50 Cts.; Three lbs., $1.00 post-paid. **Leaming,** award the medal over all other yellow corn, Paris Exposition, 1878. Peck, $1.25; bushel, $3.50. **White Belgian Oats,** $2.50 per bushel. **Russian White Oats,** $1.40 per bushel. Our celebrated **Canadian Oats,** $1.60 per bushel. **Order at once.** Demand three times greater than ever. 3 pounds of any of the above $1.00 post-paid. Remit by P. O. Order, Draft or Registered Letter. **Our large illustrated Catalogue FREE! Address, BENSON, MAULE & CO., 129 and 131 South Front St., Philadelphia, Pa.**

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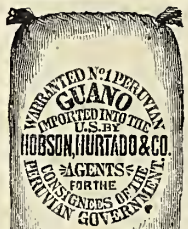

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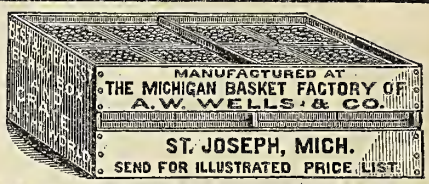

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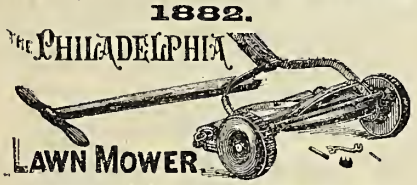

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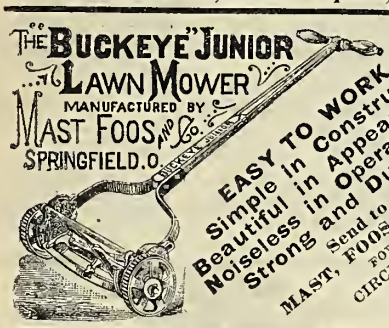

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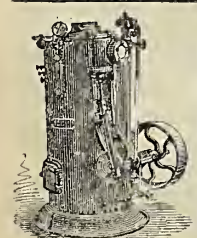

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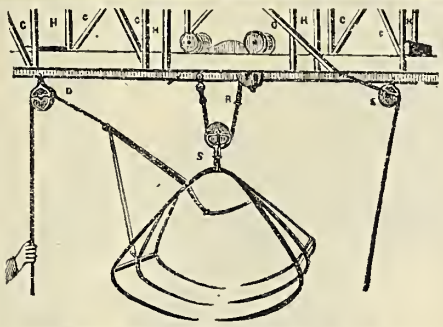

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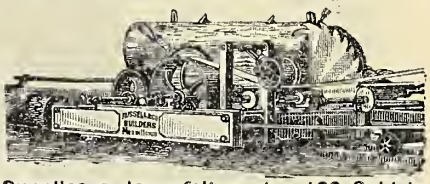

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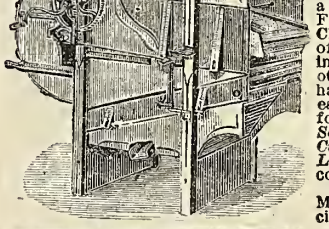

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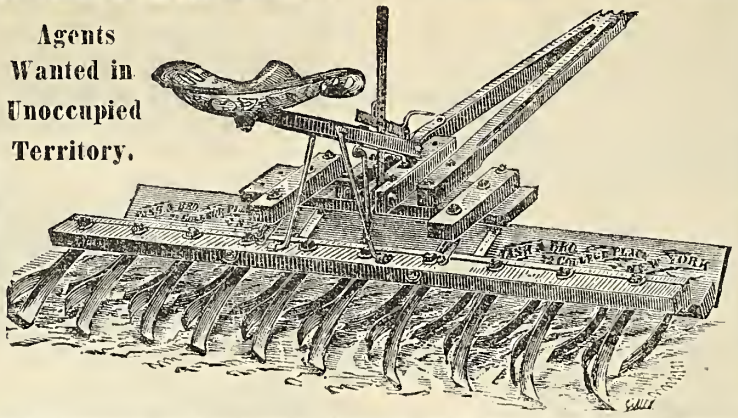

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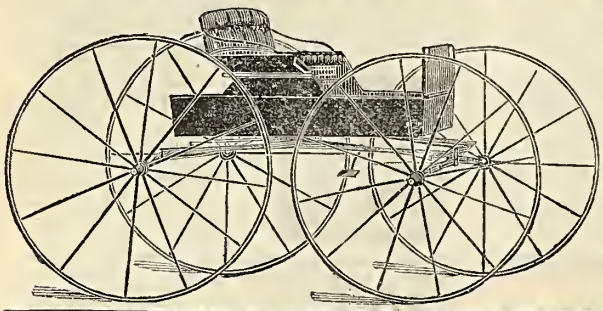

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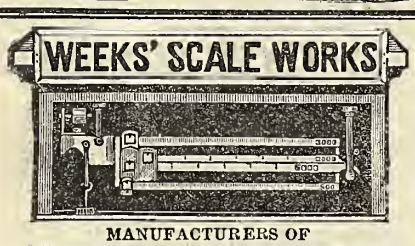

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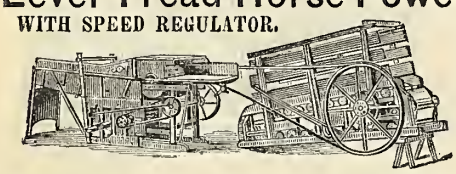

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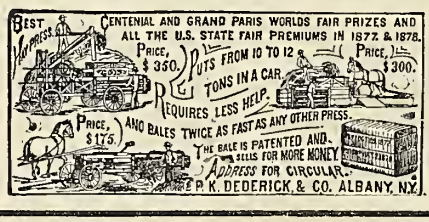

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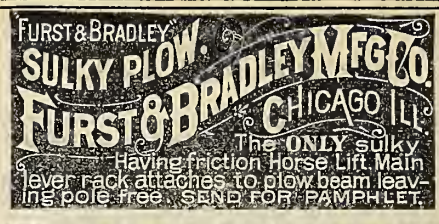
The editors of the FOREST AND STREAM, (39 Park Row, N. Y. City), invite the views of landowners on this topic.



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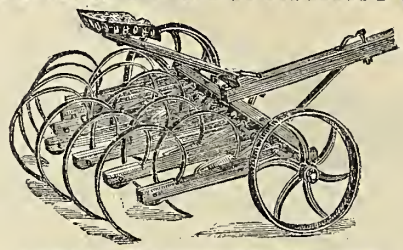

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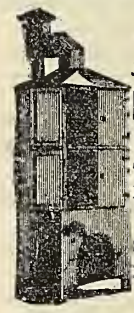

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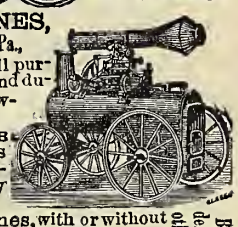

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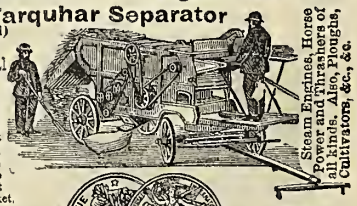

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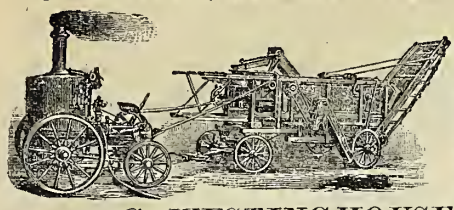

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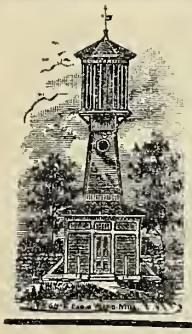

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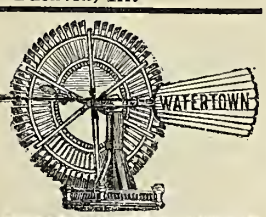

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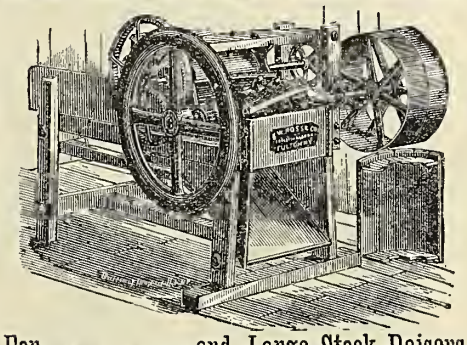

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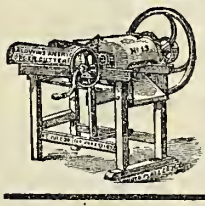

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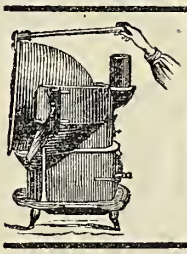

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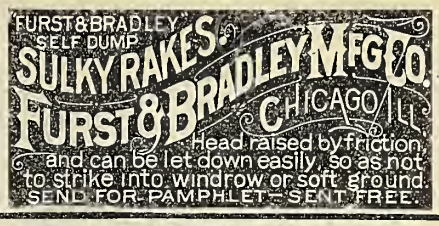

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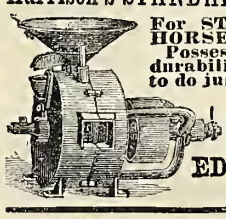

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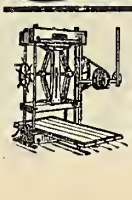

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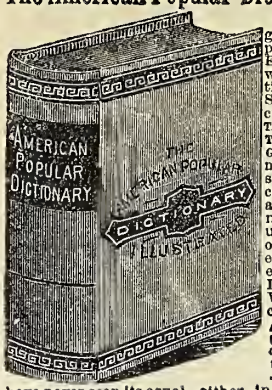

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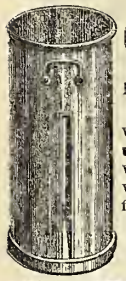

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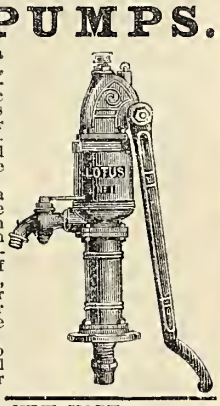

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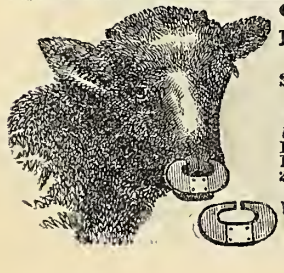

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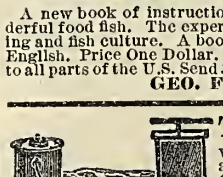

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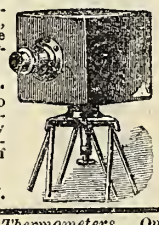

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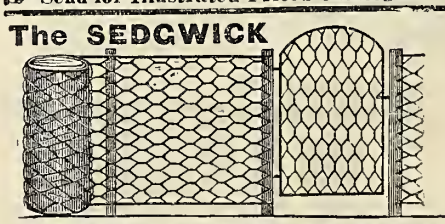

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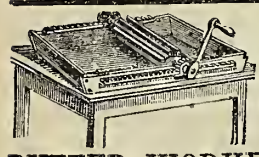

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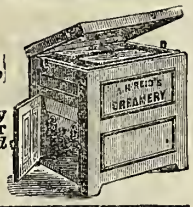

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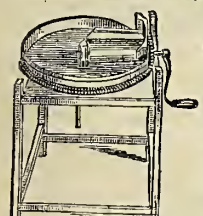

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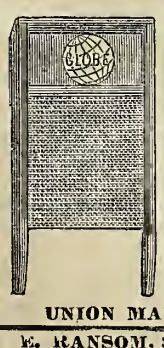

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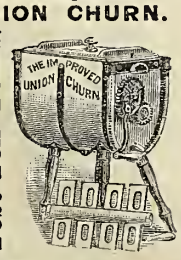

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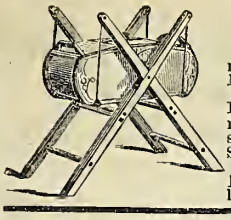

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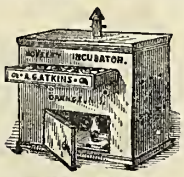

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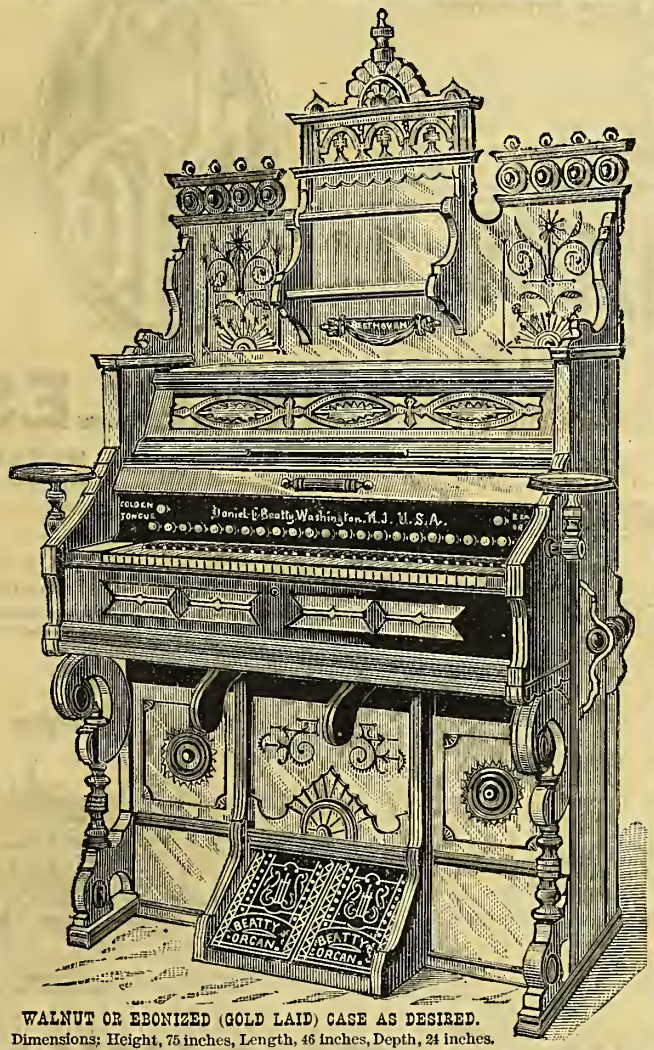

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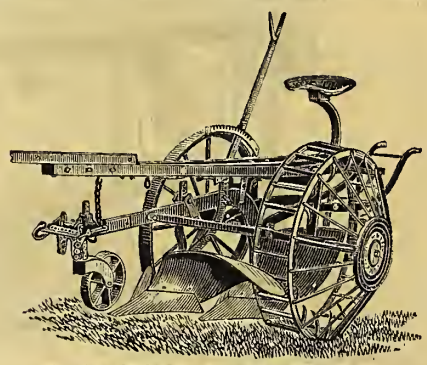

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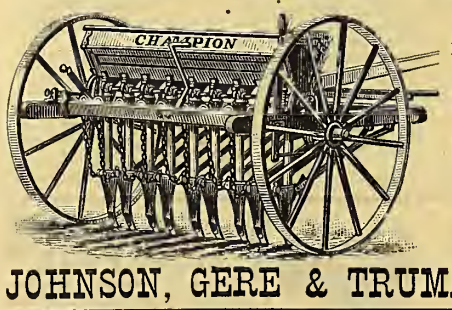

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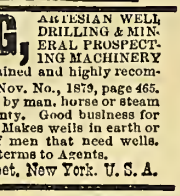

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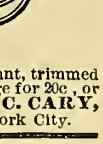

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Price per Ton $50.—Single Bag at Ton rate, $5.00.—No Cartage Charged.

From the *Connecticut Farmer*, Hartford, Conn., Oct. 15th, 1881.

A Big Corn Crop.

Mr. S. R. Wells, of Wethersfield, has the largest piece of corn in that town, if not in Hartford County. The variety is Blount's Prolific, and throughout the two acres it stands 13½ feet on a level, with from one to three ears on the stalk. The largest stalks are fully 15½ feet high, and many of the ears are eight feet from the ground. Not a particle of stable manure has been used on the land for five years, the crop being raised with Mapes' Corn Fertilizer, 500 pounds to the acre—400 pounds harrowed in, and the remaining 100 put around the hills at the second hoeing. Single stalks will weigh six pounds each, and besides a fine yield of corn there will be an immense supply of fodder. On a neighboring acre, where stable manure was freely used, the stalks are about as tall, but not as heavily eared, and the corn is a week or ten days *later* than the other, and was not quite ready to cut up last week. Mr. Wells says this is the first corn he ever raised where he had to carry around a ladder in binding the sheaves. Only by climbing up about five rounds is he able to properly secure the top; but he isn't disposed to grumble about the work, in view of the size of the crop.

Our readers will note that this is the same variety of corn as that used by Mr. Hurd for ensilage purposes at Forestville. There is probably nothing better for a fodder crop, but there would seem to be some danger from frost in a short season, which might seriously reduce the corn product.

Yield of the above Crop of Blount Corn, 180 bushels of ears to the acre.

S. R. WELLS, Wethersfield, Hartford Co., Conn., Jan. 14, 1882, reports on his corn crop described above in the *Connecticut Farmer*.

"The yield of my corn crop was one hundred and eighty (180) bushels of ears to *the acre*. I have shelled three bushels of ears, and they gave two bushels and two quarts of shelled corn."

NOTE.—The proportion of shelled corn reported by Mr. Wells is very large, even for the Blount corn. The report of the committees on the enormous "Rural Farm" crop of Blount corn grown in 1880 with the Mapes Manure stated: "A bushel of ears weighs 35 pounds, and gives 17½ quarts of grain, weighing 28.99 pounds, the cobs weighing 6.01 pounds." The actual yield of this crop (reported in *Rural New Yorker* Jan. 1, 1881) was 134.44 *bushels* shelled corn per acre.

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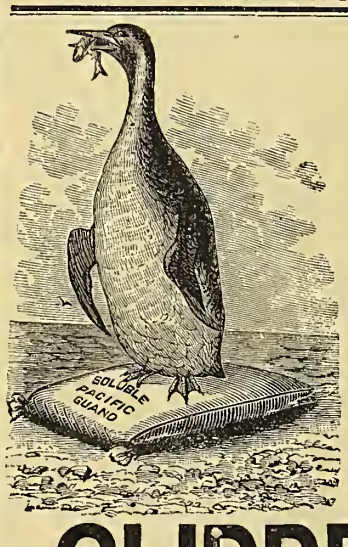

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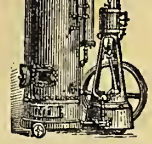

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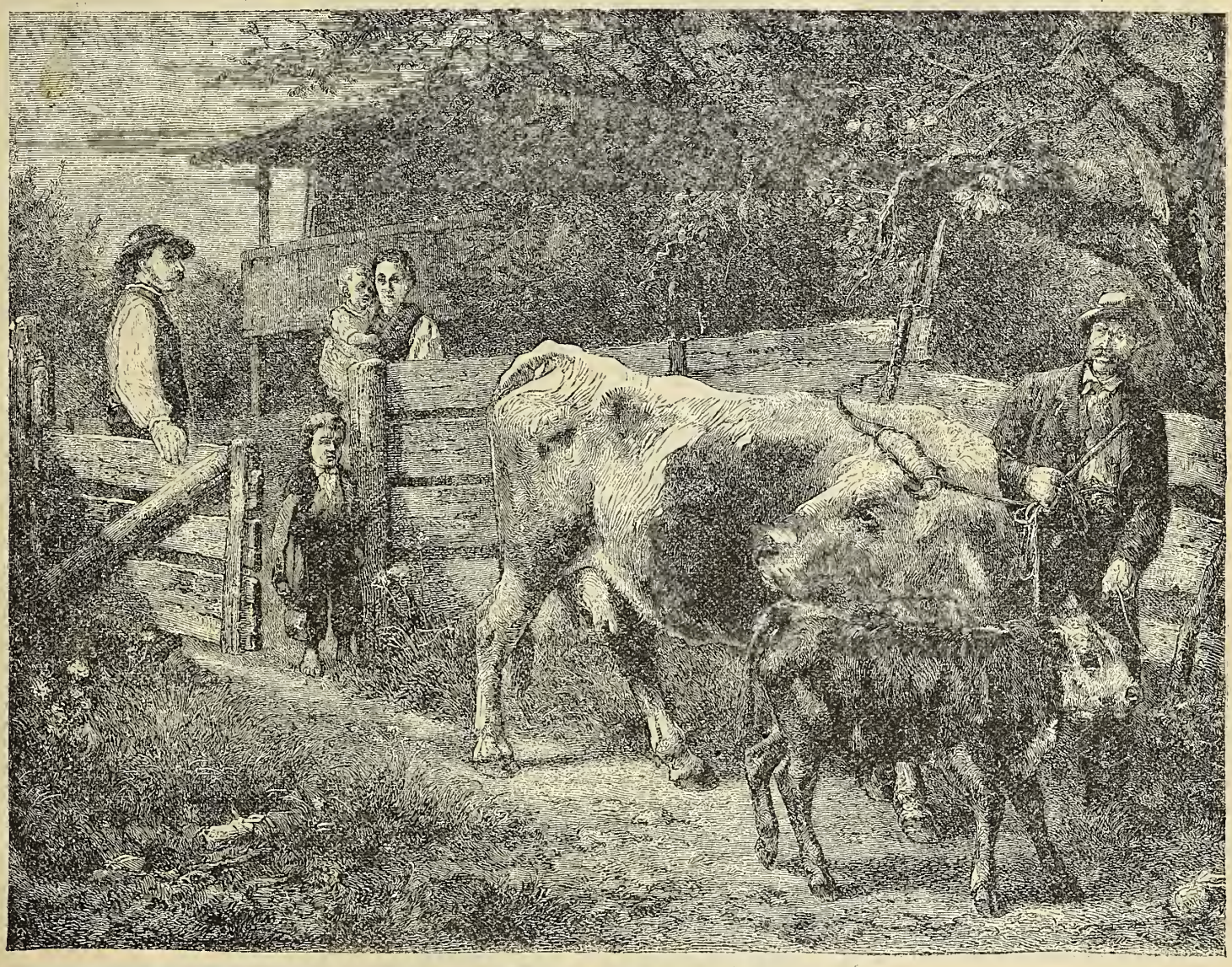
AMERICAN AGRICULTURIST

For the Farm, Garden, and Household.

"AGRICULTURE IS THE MOST HEALTHFUL, MOST USEFUL, AND MOST NOBLE EMPLOYMENT OF MAN."—WASHINGTON.

VOLUME XLI.—No. 5. NEW YORK, MAY, 1882. NEW SERIES—No. 424.



FAMILY PETS—PARTING OF FRIENDS.

The dividing line betwen the human and other animals, as respects intelligence, tact, and reasoning powers, is a narrow one, and difficult to fix definitely. Some of the latter often exhibit higher mental development in certain directions than many of the former. In going downward, intellectually, from man, it is usual to rank the ape family next, and then the horse and the dog—the respective friends of these last two not agreeing as to which holds the higher place. After these there is a long succession of animals to which no two persons would assign the same place in the descending scale—as the beaver, the fox, and so on down to those animals and insects following only a blind instinct. The common house rat will be placed high up by those who have tried to exterminate it by ingenious contrivances, or by any means save poison so placed that it would be taken by the human animal. No one can carefully study the animal creation without feeling that there are a hundred animals that may contest for supremacy in reasoning powers, and foresight in adapting means to ends.

The sentiments of friendship and affection, in all animals below man, are usually restricted to parental instinct, and a common interest in the care of the young, lasting only a single brief season, and then disappearing. But between man and several of the domestic animals there often exists a strong regard, akin to the affection of those of the same sex in our own race. In the engraving our artist has graphically illustrated a scene, not rare, where the sorrow at separation is almost as strongly evidenced by the maternal "bossy," as by the attitude, countenances, and tears of the bereaved family. For years the cow has been kindly cared for, fed, petted, and perhaps protected under a portion of the same roof; while in return she has contributed not a little to the family sustenance, particularly of the little ones. But now, stress of circumstances has compelled a lasting separation, and the expressions of grief are strong and mutual, at least on the part of the cow, who is doubtless endowed with the faculty of memory to a sufficient degree to recall past kindness. The simple calf has no such memories, and exhibits no emotion, though the children may regard the loss of this pet as much the greater one by far.

The American dairyman needs to visit the Channel Islands to learn the full extent to which kindness is carried in the rearing of cows. So long have they been a part of the household—fed, milked, brushed, and petted by women—that gentleness and an amiable temper have become strong traits of character in the Jersey breed of cattle. This power of developing the finer qualities of the bovine nature should be more thoroughly understood, and the treatment regulated accordingly. A kick costs more effort than an act of kindness, and does more harm than good,

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The Attention of the Reader is invited to the Announcements on pages 220 and 221.—The "Gallery of Paintings" is an unusually fine work, very highly appreciated by all who see it. The Special Premiums for MAY, are valuable.—The Call for Canvassers is a good opportunity for thousands of persons desiring light, pleasant employment. The General Premiums are still open as noted on page 221.

AMERICAN AGRICULTURIST.

NEW YORK, MAY, 1882.

Suggestions for the Season.

About Repairing Buildings.

The barns are usually empty at this season, and now is the best time to make any necessary repairs. If experience has shown the stables to be inconvenient, let the improvements be made before the barns are again filled. There may be some holes in the roof, and a little patching may save many times its cost, if done in season; in short, leaks of every kind about the farm buildings should be promptly stopped. Look well into the granary for mouse holes, through which the profits of a whole field may pass. They may be closed with a strip of tin. The work of half a day in looking for and closing these places, may be the most profitable of any done on the farm. The roofs, the floors, the sides, the doors, and all other parts of the barns, should now be put in good order, and another coat of paint be applied if the last one is beginning to wear through. A stitch in time will save more than nine in making such repairs.

Treatment of Bones.

Bones accumulate on every farm, and a hunt for them will bring out many more than one would expect to find. When properly treated, they furnish very valuable food for growing plants. Whole bones, as they are thrown out from the kitchen, are so slowly decomposed, that they are of little use, unless applied very largely. They need to be broken up or made fine in some way that the large amount of phosphoric acid, etc., contained in them may be available. It is not practicable for ordinary farmers to have bone mills, and the next best thing is to break them up somewhat with an axe or heavy hammer, and mix them with unleached ashes, keeping the heap moist enough so the alkali will "eat" them, and render the bones soft. The bones thus treated will crumble to fine pieces when dried, and are then ready to be spread upon the land. Every farmer should see that all bones are thus made into a valuable home-made fertilizer.

The Mangold Wurtzel.

Root Crops should hold a prominent place in the system of rotation, wherever the land is adapted to their production. One of the best of this class is the Mangold Wurtzel, concerning which "C. H. W.," Kings County, Nova Scotia, and several others make inquiries. This crop is very exhaustive when removed from the farm, but may be profitably grown for feeding purposes. It grows fairly on nearly all soils, but best on upland loams. Land free from stones and other obstructions, should be chosen. Deep plowing is beneficial, and for long varieties, is essential to success. After plowing, apply a liberal dressing of manure. The manure must be fined with a wheel-harrow, or other pulverizer. Cross-plow the manure under, and mix well with the soil to a depth of at least six inches. Commercial fertilizers, either the "Complete Manures," or the special fertilizers, which are made for this crop by several reputable firms, and are on sale throughout the country, may be applied to the surface, and will usually prove highly beneficial. Wood-ashes (unleached), ground bone, and superphosphates, are also valuable fertilizers for this crop. Salt, in quantities ranging from five to twenty-five bushels per acre, sometimes increases the crop. The soil must be made very fine, and the surface as smooth as possible. Sow the seed 4 to 6 pounds per acre at the North about the middle of May. Rows may be from 18 to 30 inches apart. The latter distance will admit of horse cultivation, but this is more expensive than closer planting, and the use of the wheel hoe and other hand implements, Level culture is cheaper than growing the crop on ridges, and will be generally found as satisfactory. If the ground is dry, soak the seed from thirty-six to forty-eight hours in warm water, keeping it up to blood heat. Afterwards roll the seeds in plaster if obtainable, and plant with a good drill. Cover the seed 1½ to 2 inches deep, unless on wet-lands, when shallower planting is better. Transplanting may be resorted to for filling vacant places in the rows. Thin to 10 or 12 inches. This will not give the largest roots, but a crop of heavy weight and good quality. Of the long varieties, the "Silesian," "Long Yellow," and "Carter's Improved," are among the best. The "Red Globe," "Yellow Globe," and the "Yellow Oval," are easier to harvest on account of their globular form.

Care of Pastures.

A good permanent pasture, handy to the barnyard, is very convenient, almost a necessity, on every well regulated farm. Such a field needs to be well fertilized and cared for, that it may give the best returns in an abundant supply of green food, for farm stock. A top-dressing of fine well-rotted manure in winter is excellent, but if not done, a dressing of 50 to 100 pounds of nitrate of soda per acre may be applied. It is best to sow this just before a shower, that the rain may carry this very soluable food to the roots of the plants. After supplying the necessary fertilizers, it is important not to overstock the pasture. Let the adjustment between the number of animals and the capacity of the field be such, that there may be good feeding throughout the whole season. If such a pasture has a natural spring, its value is much increased The next to this is a well, provided with a windmill, for raising an abundant supply of water.

Haying Machinery.

The modern progressive farmer has many labor-saving machines within his reach to aid him in making hay. The scythe is serviceable in cutting the grass in fence corners and around trees, but further than this it does best when hanging out of harm's way in the barn. A rough field is now seldom a good excuse for not using the horse mower. Ground too rough for this implement, should be put in proper condition, or be left as a pasture. A "tedder" is a valuable aid, as it facilitates drying, and therefore the quicker housing of hay, thus escaping storms that ruin much hay made in the old, slow way. All of these machines, from the mower to the horse fork, should be in good trim for work before the time for using them. Every bolt, screw, hinge, and pulley, ought to be examined now and put in place. This is proper work for the rainy days, before the grass is ready to cut. See to these little things—making such purchases as may be necessary, thus keeping ahead of the work.

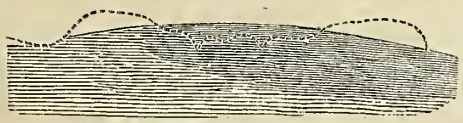
Abuse of Barn Cellars.

A great change has come over the farm during the last thirty years, in all our thrifty farming districts, in the general use of barn cellars. Formerly such an arrangement of the barn was a novelty, and farmers have slowly learned its great advantages. The greater comfort of cattle, the cheaper cleaning of stables, the more convenient watering of stock, the larger use of peat, muck, and headlands in the compost heap, and the greater value of the manure made under cover. Now the cry is raised of damage to fodder and stock from the barn cellar. Almost any good thing can be perverted and become a nuisance, and it were strange if men who do not read much, and think less, could not abuse the barn-cellar, which is the stomach of the farm. The same kind of men not infrequently abuse their own stomachs, and suffer grevously in consequence. "If you make your barn-cellar tight, carbonic acid gas and ammonia are thrown off and injure the quality of hay stored in the rooms above, and the health of the cattle in the stables. If you turn your pigs into the cellar to make compost, and keep them from the air and the light, they become diseased, and you put bad meat into your barrel to breed disease in your family." These are not uncommon complaints, circulating in our agricultural journals. Well, suppose we ad-

mit these things to be true, what of it? Is there any necessity for having a barn-cellar, without ventilation? If you leave one end open toward the south, you certainly have ventilation enough—and the gases that are evolved from fermenting manure are not going through two-inch stable plank and the tight siding of the barn when they have the wind to carry them off. If a barn cellar is properly managed, and seasonably furnished with absorbents, the ammonia will be absorbed as fast as it is formed. There will be no odor of ammonia that the nostrils can detect. If the pigs do not do the mixing fast enough, the shovel and the fork, the plow and the harrow, can be added. The making of compost under the barn is nice work for rainy days in winter, and is more likely to pay than any work exposed to the storm. The keeping of pigs under the barn is a question of two sides, and however we may decide it, barn cellars will stand upon their own merits. Any farmer who makes a business of raising pork for the market will find a well-appointed pig-stye, with conveniences for storing and cooking food, a paying investment. If he sees fit to utilize the labor of his pigs, by making compost in a well-ventilated barn-cellar, their health is not likely to suffer from the wholesome exercise, or that of his family from the use of the flesh. Swine, furnished with a dry sleeping apartment and plenty of litter for a bed, will keep comfortably clean, and not suffer from overwork in the compost heap. If anything is settled in the experience of the last thirty years, it is the economy of the barn-cellar. Our most intelligent farmers, who can command the capital, invest in them. A nice appendage to them is a watering trough fed by a spring or a large cistern in the embankment, to catch all the water, and bring it out by a faucet upon the stable floor above. This works admirably. Any farmer who reads the *American Agriculturist* will learn how to use the barn-cellar and not abuse it. C.

Road-Making.

The rush and hurry of getting in spring crops closes with planting corn. A week or so of comparative leisure then follows, that may well be filled by working out the road tax. The kind of labor to be done on the highway depends much upon circumstances. If in a new country, the aim usually is to make the whole length of the road as passable as the allotted tax will permit. In older



CROSS-SECTION OF GOOD ROAD.

districts it is best to mend bad places, and do the work so thoroughly, as to be a permanent improvement. It is better to do only a small part well each year, than to distribute time and expense over the whole length of the highway doing nothing thoroughly, and repeating this year after year. When all the road bed has been properly made, the main work thereafter is to keep the surface hard, smooth, and of the right slope (see figure), that water may be carried off rapidly after a rain. A large >-scraper, drawn by four horses, passed over the road now and then as needed, will do much to make the old country roads what they should be.

Disposal of Rubbish.

In the course of years there will accumulate on every farm and in every garden, a quantity of unsightly stuff. Broken crockery and glassware, old fruit and tomato cans, worn out sauce-pans, and other wastes of the household. These can not be composted or turned to any useful purpose, and if allowed to be scattered about, make the surroundings unsightly. One of the best methods of getting rid of such stuff, is to dig a dry well, and provide it with a cover too heavy for children to displace, and deposit all such rubbish in this. When filled to within three feet of the top, take a piece of timber and pound down the contents as compactly as possible, and fill up with earth. The well thus covered can be planted over, and it will answer a good purpose as a local drain, while another receptacle can be made for future accumulations.

In the Poultry Yard.

The young chicks will thrive best when kept clean and dry. Those hatched this month, if of the best breeds, usually begin to lay early in the fall, and if kept warm and well fed, will give a supply of eggs through the winter. If the coops are placed in, or adjoining the garden, to allow the chicks to wander freely through it, they will do little harm, until large enough to scratch up the beds, and nibble at the plants, while they will destroy many insects. Let them have an abundance of pure water and wholesome food; these, with good housing from the wet and cold, will secure health and a profitable growth. See the fall treatment of the rearing of Turkeys, on page 201.

The Sheep and Lambs.

Fatten and market dry ewes as soon as possible. Some ewes which have lost their lambs, or from which they have been taken, will need to have the milk partially removed from their full udders for a few days. Neglect not to remove filthy tags. It is well also to clip the wool from about the udders, as much disease in the lambs is often caused by filth from the ewe's wool. There is but little in favor of washing wool on the sheep's back, and for old and feeble animals it is a positive injury. The practice is unnecessary, disagreeable, and dangerous to the health of both men and sheep, and may well be abolished. Sheep ought to be so kept, that the unwashed wool may be clean enough for market. Newly shorn sheep need protection during storms. If this be looked after properly, early shearing is not objectionable. After shearing, the ticks gather on the lambs, and may be destroyed by dipping them in tobacco water, with sulphur added, or some one of the various effective "Sheep Dips."

Care of the Horses.

Flies are a source of much discomfort and fretfulness. Nettings are now sold quite cheaply, and much more than pay their cost every year. In the absence of these, an easily made good protection is a thin cotton sheet fitted to the neck with holes for the ears, and buckled under the throat, or even tied there with straps of the same material. Let it cover the back and hang loose at the sides, to give free access of air; this may be held in place by a crupper-band passing under the tail.—When horses are not driven on hard stony roads, or used in stony fields, the shoes may be removed for a time with benefit to the feet.—A quantity of green fodder, as rye, etc., is very acceptable to mix with the dry feed. This keeps the system in good order, and saves the use of medicines. Ordinary light farm work seldom injures mares nearing their foaling time. They should be kept in good health. It may be necessary to give a gentle laxative, as bran or linseed-oil cake. If a purgative is needed, administer a pint of *raw* linseed oil.

About Sweet Corn.

Strange as may seem to those accustomed to sweet corn, there are parts of the country where it is yet unknown. In many places in the West and South people still content themselves with the "roasting ears" of the common field corn. The history of sweet corn is obscure, but there are facts which point to its origin with the Narragansett Indians in Rhode Island. There is the same difference between sweet and field corn that there is between wrinkled and common peas. The conversion of the contents of the grain into starch is arrested, and the seed in both remains much wrinkled. The writer can recollect when a Massachusetts man living in Rhode Island, sent annually by stage, as an acceptable present to his friends in Boston, a basket of sweet corn. It is within comparatively recent times that sweet corn has become common. The *American Agriculturist* no doubt reaches many who are not familiar with the varieties of corn known as "sweet," and we do a good service to these when we call attention to its superiority to any common kind of corn. The mail now allows every one to procure seeds from dealers anywhere at a mere trifle for postage, and the seed are within reach of all. Among the earliest varieties, "Early Minnesota" is one of the best; for the main crop, we have used "Triumph," and "Excelsior," and consider whichever one of these happens to be on the table at the time as the best. Besides these, there are a dozen or more varieties, all good, and vastly better than any kind of field corn.

Protecting Melon and Other Vines.

Every one at all conversant with raising melons, cucumbers, or squashes, knows well the propensity of the bugs to eat both leaves and stalks. They often appear by thousands, and unless hand picked, or poisoned, quickly destroy a large patch of promising vines. Some years they are worse than in others, and it is necessary to be always prepared for them, and this is best done by preventing their reaching the growing vine with some sort of screen or covering. Our usual practice, as soon as the vines appear, is to cut old newspapers into pieces about

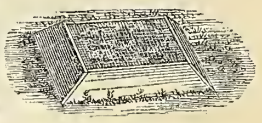


Fig. 1.—BOX PROTECTOR.

Figs. 2 and 3.—WIRE SUPPORTERS.

twenty inches square, and place one over each hill, covering the border with earth. This effectually keeps off the bugs. The plants raise the paper as they grow. But during a rain or heavy dew the paper breaks and the plants are at the mercy of the bugs. This plan does not answer well for the larger squash or pumpkin plants. A good protector is shown in figure 1, consisting of a box 12 inches square, and 5 or 6 inches high, with a piece of mosquito netting nailed across the top. Wire netting is more durable, and if painted such "boxes" will last a lifetime. Make the boxes bevelling, that is, wider at the bottom, for close packing in nests when not in use. An effective and cheap plan is to soak mosquito netting in oil, and when dry place it upon a frame over the vines. One method of doing this is shown in figure 2. The ends of two bent wires are placed in the earth to support the netting. A modification of this plan is shown in figure 3. Still another plan is given in figure 4, in which the supports are of wood. The netting should be cut about 24 inches square, and when placed over the frame, cover the edges with earth. Vines thus protected are safe, and will attain quite a growth before the covering need be removed.

Fig. 4.—WOOD SUPPORTER.

Sweet Potatoes.

The sweet potato may be cultivated much farther north than is generally supposed. Indeed there is scarcely any locality where a crop of Indian corn can be grown, in which there may not be raised a crop of sweet potatoes, unless the soil is heavy and cold. In such soils success cannot be expected. Of course it is now too late to speak of starting the plants, but several advertise them every year, and there is no difficulty in getting them by mail, or in large quantities by express. Though the sweet potato is very sensitive to frost, there are few plants that will stand so much abuse in travel as this. If the plants at the start are well rooted, and no reputable grower will send out any others,

no matter if the sets have lost their leaves, so long as there is a green stem and a good root, they will grow. In all northern localities we advise, by all means, to plant upon ridges. It is a good plan to place rows of well rotted manure three feet apart, and then with the plow turn up ridges over the manure, and finish them with the spade. The ridges being made, level their tops, and set the plants every 15 inches. A common trowel, or an implement made from a shingle or other thin board, is the best thing for setting them. Thrust this straight down, and by moving it back and forth, open a hole; put in the plant down to the last eye. Then put in the trowel, or wooden substitute, a few inches away from the plant, and crowd the earth *firmly* up to it, filling the hole thus made with a stroke of the implement. If the soil of the ridges is very dry, it will be well to make the holes for the plants, fill them with water, and let it soak away, and then set the plants. Provide for a few more plants than are likely to be needed; these may be set out, close together in a convenient place, to be drawn upon to replace any that may die in the ridges. The after-culture consists in keeping the ridges clear of weeds, and after the vines run and cover the ground, occasionally lift them by running a hoe handle or other stick under them, and prevent them from taking root.

Tool Houses and Tools.

In a large garden it is a great convenience to have a garden house of some kind. A portion of a shed or other out-building, or a room made in the barn will answer. Its object is a place where the tools, and whatever else belongs to the garden, may be always found when wanted, and to which they may be returned when not in use, unexposed to storm and dew. We have known a board placed as a roof against a fence, with doors below, to answer well, but it is much better to have a room, with a place for seeds, and wall room enough to allow each tool to be hung up, and a bench on which to do needed work. The habit of returning tools to a fixed place is easily established, and will save much time in hunting for one when needed. All, save large implements, like the lawn mower, can be hung up, wooden pegs being more convenient than nails. There should be a place for labels, twine, wire, and all other things likely to be suddenly needed. The cupboard or other place for seeds, should have lock and key, and here should be kept Paris green and other poisons, where only those who are to use them can get at them.

Beginning Gardening in May.

A large number of our readers will no doubt change their place of residence on the first of this month, and must begin their gardening late, if at all. This should be no discouragement, as all but the very early crops will do well if sown now. But no time should be lost, as every day is of importance. Such plants as tomatoes, early cabbages, egg plants, and peppers, can be bought of those who raise them for sale. With beans, sweet-corn, melons, squashes, and all the tender vegetables, this month is early enough in all the Northern States. Even grape vines, and other small fruits may yet be planted, if dormant plants can be had. For the flower garden, most of the bedding plants may be purchased in pots, ready to be turned out and seeds of the desirable annuals sown.

What is Mulching?

Having used the term *Mulch*, for these many years, we were desirous of learning its origin, and after much search through cyclopædias and dictionaries, find it is derived from the Hebrew word for partly rotten straw. Loudon says: "Mulching consists in laying a circle of litter around newly planted trees to retain the natural humidity of the soil." Really, mulching is whatever will prevent evaporation from the soil, and in American practice is even extended to mellow earth, keeping the surface of the soil light by constant stirring so that it will be a poor conductor of heat. Still, by mulching, is generally understood the placing of some material upon the soil that will prevent evaporation, and it is of little consequence what this material may be. Chips, sticks, tan-bark, sawdust, straw, litter from the stables, leaves, grass, or small stones—whatever will cover the ground and prevent evaporation may be used as a mulch. We have known coal ashes to be used, and much virtue ascribed to the ashes, while they only prevented too rapid evaporation. We once visited a place upon which there were many fine evergreens; the owner claimed that his success in planting was due to placing flat stones from a neighboring quarry around the newly set trees. The stones, no doubt, did excellent service, as any other stones would have done—they simply served to keep the ground beneath them moist—as a mulch. The action of a mulch being merely mechanical, it makes no difference as to the material. The natural mulch is leaves, which not only prevent evaporation from below, but allow the rain to pass between them to add to the moisture of the soil. It is no doubt within the experience of every one that the earth beneath a stone, a board, or whatever has laid upon the surface, is always moist. This condition may be produced over a large surface, by merely covering it with any material that will prevent evaporation. With all newly set plants, whether trees or small plants in the garden, a little litter, or whatever may be at hand will be of great benefit. In an article on p. 206, we have given an account of some French experiments in covering the soil with an impervious material. Let any one who doubts its value mulch a part of his strawberry-bed, and leave a part of it uncovered; we are sure that he will be convinced of the value of mulching.

That Old Grape Vine.

Over a large portion of the country it is the custom to move on the first of May. In villages, especially, the new tenant is likely to find in his yard an old and neglected grape vine, the buds of which may have already started, even if the shoots have not begun to elongate. We receive each year inquiries as to what may be done with such a vine, and as these come quite too late for a reply to be of service, we anticipate them. One who has such a vine, and cuts it now, will find it bleeds abundantly, and whether, as some contend, this is of no injury, it is a great nuisance, which it is desirable to avoid. As no one neglected vine will be like any other, we can only give the most general directions. One standing before such a vine will find it to be made up of old and new stems, the new ones distinguished by their smaller size, brighter appearance, and prominent, if not already started buds. One general principle must be borne in mind. The growth—the shoots—that come from these buds, and *this only* will bear fruit. When the shoots are but a few inches long, the little clusters of fruit buds may be seen. To treat such a vine one must imagine that wherever a bud is now, there will, in a few weeks, be shoots several feet long. Every old vine is likely to show vastly more buds than ought to grow. As a general rule, we may say, take every last year's cane and break off all but the *lowest two* of these buds, and when the leaves of these have expanded, cut away the rest of the cane, no matter how long it may be. These two lower buds on each cane will give all the foliage and fruit—probably more—that will be needed. Do this all over the vine, recollecting that the shoot from each bud will produce by autumn, just such a cane as now bears them. Such vines are usually on an arbor of some kind, and the new growth should be arranged to cover it evenly and be tied where need be to prevent it from getting broken. On old vines, as the season advances, vigorous shoots may start out from the lower parts, and these, unless wanted to fill a bare place, should be broken off. As such vines are used in part for shade, the new shoots when they have grown as long as needed to properly cover the arbor, should be stopped in their growth by pinching out the growing end; this will cause the leaves to be much larger and help the growth of the fruit. As a general thing, all such vines are allowed to produce many more shoots than are needed, and the whole becomes a tangled mass of leafy stems with very little fruit.

The Egg Plant.

The Egg Plant is perhaps the most thoroughly tropical of all garden vegetables, and should not be put out until the soil is thoroughly warmed, and cool nights are over. In the private garden so few plants are needed, that it is hardly worth while to be at the trouble of raising them, as they can be purchased cheaply. They should be given the warmest and richest place in the garden; let them have, when established, liquid manure, and keep them growing as rapidly as possible. It is well to place a mulch of some kind around the plants, not only to keep the soil moist, but to prevent the fruit from resting on the ground. There is one great drawback to the culture of the Egg Plant. If there are any Colorado Potato Beetles anywhere in the vicinity, they will leave the potatoes and come to the Egg Plants, and unless one makes up his mind to an almost daily hand-picking, he had better not undertake to cultivate them.

Currants and Gooseberries.

The chief draw-back to the culture of currants and gooseberries is "the worm," (more than one, but essentially the same in effects and treatment), that makes holes in the leaves early in the season, and if not checked will soon strip off all the foliage. This insect is easily managed, if taken in time. It is amusing to see the remedies given in the English papers and books, even the most recent ignoring the poison, White Hellebore, so generally used in this country. Powdered White Hellebore (not *Black*) may be had at most drug stores. Upon a tablespoonful of this, pour a pint or so of boiling water, stirring the two well together; mix this with a pailful of cold water, and on the first appearance of holes in the leaves, apply it freely, using a garden syringe or force pump if at hand. More than two applications will rarely be needed.—*Is it dangerous?*—One English work advises the use of lime, "as not being dangerous like hellebore." While White Hellebore is a powerful medicine, we have never heard of any danger from its use, and we know of its application by the acre with those who grow fruit for market. It is always applied long before the fruit is ripe, and is completely washed off by the rains. Should it adhere to the fruit in any dangerous quantities, its presence would be noticed and the berries rejected as soiled. If used as directed, it is not possible for a sufficient quantity to adhere to the fruit to be eaten unnoticed, and thus do injury. We look upon it as perfectly safe, or we should not advise it.

The White Grub and the June Bug.

The ravages of the White Grub are becoming, in this country, almost as serious as those of the related Cockchafer in Europe—indeed the two, though belonging to different genera of insects, are much alike in their habits. The grub passes (probably) three years of its life under ground, and is not thought of until, in its last year, it suddenly calls attention to its existence by the mischief it does. A heretofore verdant lawn suddenly becomes brown, and the turf may be rolled up like a rug. One may look forward to a crop of strawberries, and find the plants wilt in the row, in succession. The nurseryman may find his rows of apple or other young trees suddenly dying, and the flower-grower may find his plants wither without apparent cause. Few connect these troubles with that noisy insect that at evening comes into the house and bumps its head against the walls and ceiling, generally known as the May and June-bug, and also as the Dor-bug. This insect probably causes more losses to cultivators than any other. The grub lives some three years under ground, in which state it works its worst. If when a plant is seen to suddenly wilt, it is probable that a White-grub is at work at the root, and the plant should at once be dug up and the grub found, before it can make its way to others. The only method of effectively destroying

tbis insect is to attack it in the beetle state. When a Dor-bug appears in the house, it is an indication that there are others in the trees near-by, and traps should be set for them. The destruction of one female beetle means tbe preveution of between one and two hundred grubs. During their season many that enter the bouse may be caught and destroyed by hand, but some one of the several lamp-traps that we have figured in former volumes, should be employed. If nothing better can be devised, a lamp set in a eommon tub, but all the better one made by cutting a barrel in halves, in the bottom of whieh is a few inches of water, with a film of kerosene or other oil floating upon it, will catch and destroy many. Tbe matter is getting to be a serious one, and tbe destruction of the beetles should be a work of co-operation in order to be effective. In this, as in many other eases, the utility of Farmer's Clubs, to secure united action throughout the neighborhood, is manifested.

Late Flower Gardening.

In many localities it is the eustom to move the first of May, and this is yearly extending. One may come into possession of a place, whether a village front yard, or a larger piece of ground, and find that the previous occupant has done nothing towards beautifying it. We will assume that one has to do with an ordinary village front yard, and the same hints will apply to larger places. The first thing of all to be considered is the lawn, by wbich we meau any piece of grass kept for orua-ment, whatever may be its size. The lawn by itself, if well kept, is an ornament to any place; it is like the carpet in tbe house, the setting of whatever furnishing may be placed upon it. If the grass is thin, seratch the surface wherever it ean be reaehed, with a sharp rake, and sow on grass seed. In light soils sow Red-top; in heavy ones, Blue-grass or June-grass—two names for the same grass, and the prefix "Kcutucky" is often put before Blue-grass. If tbere are large barc plaees, it may be easier to lay turf, but in all the gardening, first seeure a good lawn. It may be that beds have already been made in the lawn; if so, it is well to occupy them, for the present season at least. A most effective plant for summer decoration is the Castor Oil plant, good in its common form, and better in what the seedsmen sell as *Ricinus sanguineus*. A single plant may be very effective, and if the space will allow a group may be better. They are easily raised from seeds. It is not too late to get the roots (rhizomes) of Cannas, and a most effective bed may be made of these, placing the taller kinds in the center and the lower-growing at the margin. A pleasing bed may be made by planting it with Coleus—the varieties are now almost without number, but the old velvet Coleus (*C. Verschaffeltii*), is excellent. If expense is considered, then a showy bed may be made by sowing a packet of mixed seed of *Phlox Drummondii*—bright, and lasting. If the veranda is not provided with climbers, plant a few roots of the Madeira Vine, and the seeds of some of the quick-growing climbers, such as the Hyacinth Bean, Lophospernum, Morning Glories, some of the better sorts being really beautiful. One, with a little thought given to selecting quick-growing and effective plants, even though he must begin as late as the first week in May, can soon put a new aspect upon a run down and neglected place, and make it a souree of pleasure to himself and his neighbors.

Wild Flowers in the Garden.

There are many real lovers of flowers, who have the first requisite for a garden—the land—who let the surrouudings of the house fall into neglect, merely because they ean not afford to buy plants with which to ornament them. It is possible in most parts of the country, to make a beautiful garden without the outlay of a dollar for plants. Could the persons referred to visit European gardens, or even see European eatalogues, they would find that the common plants around them are elsewhere highly valued. Aside from the trees, there are many shrubs that may find a place in the garden, and a host of herbaceous plants from which a proper selection will keep a garden gay the whole growing season. Take our common lilies for example. Aside from the far West, there are three common in tbe States east of the Mississippi; two of them are low, not over 3 feet high, and eommon in meadows, while tbe taller "Superb Lily," in rieh swampy places, is 6 or 8 feet high, and bears a pyramid of 10 to 30 or more flowers. If one should make a collection of these native lilies, he would be surprised at the great variety they present among themselves, not only in the size and nnmber of the flowers, but espeeially in their coloring. One could make a eollection of these native lilies, and by careful sclection find a great variety among them, so with many other native plants, which will amply repay the care that may be given to them, and one can easily stock a garden from the woods and fields. It is late now to take up most wild plants, but it is well to mark all attractive specimens for future removal. For marking shrubs for removal to the garden it is well to carry in the pockct a piece of cottŏn cloth, and tie a strip to any desirable plant; when the leaves have fallen the ends of the strip of cloth may be seen at a long distance, and indieate the plant.

Weeds in Lawns and Elsewhere.

We are often asked what will destroy a particular weed. We have just at hand a letter asking how to get rid of Chick-weed in a lawn. This is not often a lawn-weed, and as it thrives only in damp soils, its occurrenee in a lawn shows that the soil is too wet, and that draining is the proper remedy. Mueh futnre trouble would be saved if cultivators, whether gardeners or farmers, would learn to recognize weeds in their youug state. That worst of weeds, the Canada Thistle, in its iufancy may be uprooted by the rake. Let it go for a year or two, and the whole force of the farm ean not get rid of it. The advantage of disposing of weeds when they are young, is not fully appreciated; tbe rake used at the proper time, when the weeds are mere seedlings, will save much future work with the hoe. On the same principle, the use of a smoothing harrow, which is really a large rake, does good service in the corn and potato fields; destroying the weeds, while the crop plants are too firmly fixed to be disturbed by it. In the absenee of this, a common light harrow, run along the rows just as the potatoes break ground, or have made but little growth, will greatly help. The growth of the most troublesome weed, is governed by the same laws which control that of the most valued plants, and there is nothing that can be applied to the soil to kill the one that will not injure the otber.

The Lawn Mower.

Tbere is one question wbich we ean not answer; tbat is, "Whieh is the best Lawn Mower?"—Of late years we have not seen a poor one, and there are several so nearly perfect, that it can not be difficult to select one that will do good service. Lawn Mowers are now offered at such moderate prices, that one ean not afford to mow a grass plot, of even moderate size, in the old way, with scythe and sickle. The mowing of the lawn is so easily done with the mower that tbere is danger tbat it may be used to excess. In spring and early summer, while the grass is growing, it can hardly be used too often, but as hot weather comes on and the growth of grass is checked, tbe cutting should be less frequent. It is well to bear in mind that grass is governed in its growtb by the same laws tbat hold with all other plants. The amount of root growth depends upon that of the stems and leaves. A eertain amount of cutting of the foliage tends to increase its vigor, and at the same time there will be a corresponding growth of root. But we may cut too much, especially in hot weatber—and weaken both top and root growtb. Tbe only general rule that can be given is, when the grass is growing rapidly, mow often; when hot weather checks the growth, mow less frequently; do not follow any set time for mowing, but be governed by the condition of the grass and the weather.

Bare Places in Lawns.

By "Lawn" we mean any piecc of grass kept solely for ornamental purposes. It may be merely a front-yard, or on large places it may include many acres. These may from some cause show thin and poor places here and there. These may be mended by several methods. If the bare places are large, the surface may be worked over with a sharp rake, to take out dead stems and roots, and then after fertilizing, be sown with grass seed of a kind similar to the rest of the lawn. If the bare patches are small, the quickest way to mend them is to lay turf. In England, a method is in use, not only for restoring bare places in established lawns, but also for starting new ones, called "inoculating." The ground being well prepared, bits of good turf (sods), about three inches square, are inserted a foot apart each way. These will take root and spread, soon covering the whole surface. In making or mending a lawn, recollect that the work is to last for years and that a good supply of fertilizing material placed in the soil will be a good investment.

The Native Laurel or Kalmia.

While we have several species, the one generally called *the* Laurel is *Kalmia latifolia*, also known in some localities as "Calico-bush," and "Mountain Laurel." It is found from Canada to Ohio, and along the mountains far southward, and varies from 3 to 20 feet in hight. The broad evergreen leaves are of themselves beautiful, and when the shrub is in flower it is very attractive. The flowers, most interesting in their structure, varying from nearly white to very dark rose color, in this respect present a great variety, and it is not to be wondered at that many have wished to bring these desirable forms into cultivation. The attempts to cultivate the Laurel have rarely been successful, and it is amusing to read the reasons given for the failures—almost always attributed to the soil. The Laurel may be transplanted with the greatest ease, if only one condition be observed—cut the shrub back so as to remove *every leaf*, leaving only bare sticks. No half-way work—leaving a few leaves on account of their beauty—will answer. "Bare poles," as the sailors say, are absolutely essential to success. If one has not the courage to cut away every leaf—then let him leave the Laurel where it grew and not transplant it, as it will fail. A shrub thus treated, if planted in any good soil, will soon make new shoots, and form a head, and in a year or two flower profusely. All attempts to transplant the Laurel in full foliage *will fail*.

The Burn Heap.

Among the small economies of a country place should be the "Burn Heap." It not only allows one to get rid of a great amount of stuff that will be worse than useless, but will pay for the slight trouble it requires in ashes. In some out of the way locality where it will be safe, have a place for everything combustible. Old shrubs, prunings of trees and vines, pea-brush, stakes, old labels, and all such accumulations must be gotten rid of. Besides these, if any weeds have been allowed to get large enough to ripen their seeds, place these there. On a mild day set fire to the heap, and carefully save the ashes. No fertilizer is more generally useful than wood-ashes, and by taking a little pains in this manner, a good supply may be obtained.

Liquid Manure.

"It simply does wonders," said a gardener to us, many years ago. That expression well describes the effects of liquid manure judiciously used. Because a little is beneficial, it will not do to conclude that there can not be too much of a good thing and make the soil sodden with it. The soil requires to have the air permeate it, and if made *wet*, even with rich liquid manure, the plants will suffer. It is well to have a tight cask of some kind, sunk in the ground, into which the soapy wash water and the chamber slops may go; these of themselves will be excellent fertilizers. The fertilizing quality may be increased by the addition

of cow manure, manure from the hen house, sheep droppings, etc. The chief care to be taken is not to have the liquid too strong. It is better to err in the direction of weakness. Twice a week is often enough to apply it, and then only to plants that are growing. In the absence of other manures, Peruvian guano, at the rate of an ounce to a gallon of water, is the best substitute. Nothing else will so increase the productiveness of a small garden as the proper use of liquid fertilizers, as above stated.

Bee Notes for May.

If the bees have wintered well, and the advice for April in respect to stimulative feeding has been heeded, the colonies are strong, and in the more southern parts of the country are preparing to swarm. Many colonies even as far north as Ohio and New York are rearing drone brood.

Queen Rearing.

It is always best to rear Queens, even though intending to increase the colonies by permitting the bees to swarm naturally. This secures queens from selected stock, and give them as soon as swarms issue, thus saving valuable time. Skilled breeders believe that, to secure the best queens, the cells should be formed and the stock reared in strong colonies, at a time when the bees are active. To obtain these queens, remove the eggs and all the uncapped brood from some strong colony, and supply its place with capped brood, and eggs from the best queen in the bee-yard. At the same time remove the queen from the colony receiving the eggs. These bees are strong in numbers, and queenless, and will commence queen-cells at once, and as they have only eggs, or larvæ just hatched, will of necessity rear their queens from the start. With the old removed queen, a new colony may be made by placing her in a new hive, with several frames of brood and adhering bees, brought, one or two each, from such colonies in the apiary as can well spare them. Great care must be taken not to carry any queen from the old hives, as this would render one colony queenless and kill one of the queens in the new hives. If there are enough spare frames to make a full sized colony, add two or three frames, and more as the colonies grow. In this case confine the space occupied by the bees by the use of a division board. This space may be enlarged as we have more frames to add.

Forming Nuclei or Young Colonies.

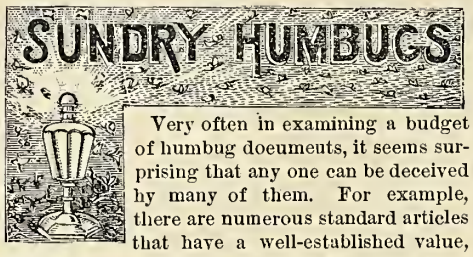
Ten or twelve days after the queen is removed, the queen cells will be capped, and should be taken away; if a queen emerges, the other queen-cells will be destroyed, or else the colony will swarm. Each cell should be cut out and fastened into a comb, care being taken not to press the cell; with this and another comb of brood in all stages of development, and a quart of bees, a nucleus is formed. If bees are obtained from other hives, care must be taken not to remove a queen. Enough bees can be taken from the old hives where the queen-cells have started to stock five or six nuclei. In removing the queen-cells, do not cut nearer the cell than one inch, and make the piece wedge-shape, broadest above, for convenience in fastening it in the new comb. The "Gallup" or "American" frames, which are 11¼ and 12 inches square respectively, can be used for the nuclei, confining the bees by the use of division boards. If hives with large frames like the "Langstroth," or "Quinby" are employed, small hives must be made on purpose for the nuclei. These should be about six or eight inches in each of their three dimensions.

Increasing the Colonies.

After the queen has come from the cell in each nucleus, and has met the drone, which fact is assured if eggs are being laid abundantly in the small or worker cells, clip one of her wings, build up the nuclei into full colonies, by adding frames of hatching brood from other colonies as the latter can spare them. By moving back the division board, the size of the brood-chamber may be made to accommodate the growing colony. If special nucleus-hives of a smaller size than the ordinary hives are used, remove the bees and queen to the hive before the colony is built up to the full size.

Why Clip the Queen's Wings?

This saves losing colonies when the bees are permitted to swarm. Secure the queen at swarming time as she comes forth, which is easily done, as with the short wing she cannot fly, and put her into the new hive. In lieu of a queen cage a tumbler may be turned over her. Remove the old hive and set the new one in its place, and the bees will soon come back; when in the hive, remove it to a new stand and set the first hive in its old place.



Very often in examining a budget of humbug documents, it seems surprising that any one can be deceived by many of them. For example, there are numerous standard articles that have a well-established value, fixed by actual cost of material and manufacture, and competition has placed the price quite as low as they can be sold. Thus, if a person should offer to supply silver dollars at 60 cents each, all sensible persons would conclude at once, that the dollars were not genuine, or that they had been stolen, or that money sent to the advertiser would bring back no dollars in return.

Good Cutlery and Silver Ware

have a value nearly as well fixed as that of silver dollars, and when a concern offers these articles at half the usual price, it is safe to expect one of the above named results. Several of our readers write us about a New England concern that offers for $5 English silver-plated cutlery, which they say is sold in America of American production for $8 and $12. They give as a reason for selling at "forty per cent less than such goods are usually sold, that there is no place where cutlery can be produced so cheap for its quality as in Great Britain." (They say nothing of the custom duties which equalize the cost here)—but if these claims are so, why are the Sheffield manufacturers complaining at American competition? But it is doubtful whether there is any place where cutlery "can be produced so cheap for its quality" as in these United States, and the buyer has the name of the maker as a guarantee of its quality. As to there being anything like a difference of 40 per cent in articles of the same grade, in favor of British manufactures, and especially under the present tariff—"tell that to the marines." These remarks apply to most if not all other standard articles wherever made.

Books—"A Literary Revolution"

was promised, and a supply of books at wonderfully low prices. The concern went into the hands of a "receiver." It re-appeared later with the title of the "Useful Knowledge Publishing Company." To judge from our letters, several of our correspondents have already acquired some "useful knowledge," if they did have to pay for it.

A "Newspaper Revolution."

Cincinnati, never to be outdone in the way of remarkable enterprises, has her "Newspaper Revolution," which revolves in a remarkable manner. It shows the immense yearly profits made by publishers of papers, and kindly offers to divide *its* profits with its subscribers—which is an excellent thing to do, when the great profits are reached. It asks at first only 30c. for a year's subscription to a $1 paper—but if one will give $1 down, he can have an "original" oil painting. In all this very little is said about the paper, but much about the paintings. These are declared not to be chromos—which is possibly so much the worse for those who get them. It is gratifying to know that the paintings are mounted on "keyed stretchers," but the greatest "stretcher" is the circular itself.

More About "Ozone."

Letters still come in quantity asking about this. We have in former articles shown what the stuff is, and the falsity of the claims of its makers. In brief—these Cincinnati parties pretend to sell *Ozone*, a gas which is not known in a separate state, and which can not be sold in packages. They do not even sell the materials for making Ozone, or anything at all like it. The thing is an utter fraud, inasmuch as it sells under a false name.

COLORED FLOWERS OF SULPHUR,

which, on burning, according to directions, can not produce Ozone, but simply Sulphurous Acid (according to the new nomenclature, "Sulphurous Anhydride," S. O_2.) Whatever may be the preservative properties of these sulphur fumes, this is not the place to discuss them, but our inquiring correspondents may be sure that whatever may be possessed by sulphur colored with Lamp-black and called by the utterly false name of "Ozone," and sold at an enormous price, may be produced by sulphur bought everywhere under its proper name, and at a few cents per pound. The makers of the stuff issue

"THE OZONE BULLETIN,"

which we are informed is "published monthly," though the particular month is not given in the copy before us. This affords some curious reading. Thus we are informed that "The Preservative is perfectly harmless. A child might eat its fill of it and suffer no trouble"! Was the writer's early education neglected, and did he never have his brimstone and molasses? Shade of Mrs. Squeers—did the boys at Dotheboys Hall "suffer no trouble" after "brimstun mornin'"? It is a libel upon the well-known therapeutic powers of brimstone. But we read: "Water treated with it, converting it into Ozone liquor, may be freely drank"—but as Samuel Weller said of the Spa, what "a flavor of warm flat-irons" it must have. And again: "As a face or flesh-wash it is highly beneficial; rendering the skin soft and beautiful."—As the stuff preserves everything, why shouldn't it preserve beauty?

Frauds upon Farmers.

Last month we suggested that this was the season for special efforts to deceive cultivators, and our correspondence shows that the warning was needed. This time the "Patent Wagon Tongue man" is around. He is a well dressed chap, as these fellows always are, and has a glib tongue (not patented) of his own. He calls at a Missouri farmer's house, is very communicative, tells where he has been and how successful he was in selling his wagon tongue patent. But just now he is on his way home, can not come to that county again, and will sell the right for this county for $250. No hurry about it, but should farmer conclude to buy it, he has only to write sending his note for the amount, and he can have the right for the county. In a few days another well dressed, glib-tongued gentleman comes along. He has heard that farmer has bought the county right. He made a big thing out of selling the patent tongues in Nebraska, and would like to buy the right for that county in Missouri. He will give the farmer $400 for his right, and puts down $10 to bind the bargain. Missouri farmer does not "let on" that he has not yet bought the right; will decide in a few days; he shrewdly hurries off his note for $250 to the address given, to get the right and make a profitable trade. His purchaser never returns but the note does in due time, at the bank in the next town, where it was left for collection. A correspondent in La Salle Co., Ill., writes that the "Patent Wagon Tongue man" has been there and victimized a farmer in the vicinity to the amount of $240. This farmer *could not afford to take the American Agriculturist* when he applied to him and asked him to join a club!

A Windmill and Pump.

Here is another swindle that has been successfully pushed in Illinois. The agent agrees to put up the windmill "with all the attachments" for $150. He makes out an order for the mill, and all the separate articles, amounting in all to $275. The farmer demurs, but the agent assures him that "this is a mere matter of form; these are the company's prices, but he gives his promise that the whole shall not cost but $150." The farmer signs the order; the company send the mill with

men to put it up, and the whole charge is sometimes as high as $350. The company fall back on the order signed by the farmer, and know nothing of any promises made by the agent. We learn that some farmers will contest these bills, and all should repeated caution: "FARMERS, BE CAREFUL WHAT YOU SIGN."

The "999th Subscriber."

The publisher of the "Washington Home Companion" has been honored by the Postmaster General who has given his name a place in the list of Frauds. The 999th subscriber was to receive a fine piano. Charles K. Wilson is his name, and Charles notified a large number that *each* was *The Fortunate Nine-hundred and Ninety-nine-er*, merely suggesting that a remittance to pay the cost of boxing and expense of shipment would be acceptable. Remittances came and pianos did not go, hence the act of the Postmaster General.

"The Marriage Assurance"

schemes, under the name of "Mutual Aid" and "Mutual Benefit" Associations still send out their circulars, but the circle widens, and they now, instead of coming from Pennsylvania and other central points, originate in the far West and South. Several of our readers ask about them; one in Alabama who thinks that the "Southern Mutual Aid Association," as it gives as references some "prominent men" in Miss., ought not to be included with other similar concerns. We give little weight to such references. Some men allow their names to be used out of pure good nature, some as the quickest way to get rid of the applicant, and others still, flattered at the idea that their name is sought, out of vanity. We look upon this scheme by whoever conducted, as utterly uncalled for and open to so many abuses that it had better be let alone.

"Variety Catalogues."

We have before spoken of what, for the want of a better name we have called "*Variety Catalogues.*" The number of these is astonishing, and they are so nearly alike that they seem to be printed all at the same place. The amount of trash they offer would surprise one who had never seen them. They are mostly sent to young persons, and the articles offered are of a kind to attract the young and the ignorant. One before us professes to sell "A Great Book of Secrets or how to make $10 a day without capital;" "The Golden Key to Business Life;" "Galvanic Batteries to cure everything for 25c.!" "Fortune Teller and the Witches' Key to Lucky Dreams," and a long list of such stuff. But worse than these are numerous pictures and books which are advertised in a manner to make it appear that they are thoroughly bad. Whatever the books may be, the descriptions of them are vile; indeed their titles even will not bear repetition. We do not wonder that a father in Missouri writes with indignation at finding such stuff sent to his son....

Some Remedies.

A college student in Ohio, sends us a lot of circulars of what purports to be "*Dr. Churchill's Remedies*," and asks us to investigate the matter. It needs no investigation beyond the circulars themselves. While some others who benevolently send prescriptions, direct a lot of stuff which has no existenee under the names given, these order various drugs, poisonous and otherwise, that are obtainable, but give directions for their preparation which, to those who know about such matters, are simply laughable from their absurdity. After giving directions that no one can follow, there of course comes the "nub" of the whole. These remedies must be prepared *as directed*. "Unprincipled druggists" never prepare "according to our method"—but *we* will fix the stuff all right for $3—and that is what the whole talk means. These circulars are enough to frighten a well man into the idea that he is sick. But quackery under the pretence of being scientific, is carried rather too far, when a scrap of litmus paper is sent, with directions to dip it in the urine, dry it and send it with the order.—Hear this! "This chemically prepared paper will be carefully analyzed, and all the peculiarities of your disease can be determined as fully as if you had recieved a personal examination, and medicine prepared specially adapted for your case."—We have no doubt just "as fully,"—but the analysis of a strip of paper an inch and a half long, by half an inch wide! "Whew!"

About Pensions—The Fitzgeralds.

There are Fitzgeralds and Fitzgeralds.—The genuine ones will notify us promptly, as we propose to devote space in another number of the *Agriculturist* to the Fitzgeralds, and do not wish to do any body injustice. All persons having information bearing upon this subject, whether it be in Kansas, or Washington City, or elsewhere, will please forward it immediately to us, and thereby aid us in informing our readers just how many genuine Fitzgeralds there are in the Pension Business.

About Spring House Cleaning.

Probably there is nothing in the whole routine of house-keeping that is more of a bugbear than the "spring cleaning." If, as is sometimes the case, the house is set in an uproar, the furniture moved out of doors, and all the rooms made uninhabitable at once, the operation may well be dreaded. Fortunate are those house-keepers who continue in the old-fashioned method, if colds and sickness among the children do not follow house-cleaning. Of course, where hired help is especially employed for the occasion, it is necessary to keep them occupied and to do in a day as much as possible. But, as a general thing, there is no need of the discomfort that usually accompanies House Cleaning. Of course each house-keeper will have her own views about the matter, and we can only hope to make a few helpful suggestions.

About the Stoves.

Outside of cities, the majority of houses are heated by stoves, and one of the points in most house cleaning is to take down these stoves, and not put them up again. Not only a large share of discomfort, but much sickness, if not consequent death, comes from the too early taking down of stoves. In every house in the Northern States, and the same applies farther south also, there should always be ample provision for making a fire in the living room, at *any time during the year*. Cold storms may come unexpectedly, and a fire is sometimes as necessary in August as in any other month. If stoves are used for heating, the health and comfort of the family require that there should always be at least one stove in which a fire can be made at once, at any time during the year.

Do not take Stoves Down too Soon.

Those who observe the weather are aware that, in the Northern States, we do not have what is called "settled weather" much before the middle of June, and that, each year, there is likely to be a cold storm of several days' duration between the first and the middle of that month. We have observed this matter through so many years that we feel warranted in saying to those who, in the Northern States, depend upon stoves for warming their houses, do not take down the stoves

Before the Middle of June.

When stoves are taken down, and before they are stored away for the summer, the first point should be, to make them ready to put up again. Do not leave this until the cool days of autumn, when they may be needed in a hurry, but make all needed repairs *now*. There are so many kinds that we can make but general suggestions. The weak point in all stoves is the lining, and, especially where hard coal is the fuel, this may need replacing. Do not put the stove away until the repairs are made. All of the leading patterns have a name or number, and the parties from whom a stove was bought can furnish or procure the proper lining. Some stoves have air-passages and double linings; dust and light ashes may accumulate in these, and where such exist they should be thoroughly cleaned. Then

As to the Stove Pipe,

that terror to all heads of families when stoves are to be put up. Carefully mark with chalk—lead-pencil will answer well—the parts that go together. A little care now will save much trouble in autumn. In our house-cleaning talk, we have run away to stoves, and no part of the operation is of more importance. But we would say

A Word About Cleaning Paint.

If a regular "scrubber" be employed, she may leave the painted work looking bright and fresh, but it will have been done with soap and sand. Sand should *never* be used upon painted or varnished work. Strong soft soap and sand vigorously applied, will take off a large share of the paint. To clean paint, first make a moderately strong soap suds, and also have at hand another pail of warm water, with a soft flannel cloth for each, and also a plate containing "Whiting," or "Spanish White"—to be had at all paint or drug stores. One flannel being wet with the soap-suds, dip it in the Whiting to take up a small quantity, and gently rub the painted work. The surface coating of smoke and other matter will soon be removed, then wipe the surface carefully with the other flannel wrung out from the warm water, and the painted work will look "as good as new."

Cleaning Wall Paper.

The chief soiling of wall paper, especially those kinds in which some part of the pattern is slightly raised above the general surface, is due to dust. In many cases all that can be done is, to remove the dust; this is best accomplished by taking a new broom, wrapping a cloth around it, and sweeping with it from the top downward, with long, straight strokes—not up and down. This will remove the dust, and greatly improve the appearance of the paper. Sometimes the paper will be soiled in spots, as where persons have allowed their heads to rest against it. In such cases it is well to try a piece of stale bread, from which the crust has been removed, using it upon the spots as if it were a piece of India Rubber. At house cleaning time it is well to have an eye to, and

Close Up All Cracks and Crevices,

whether in the floor, or between that and the base board, where insects may harbor, as well as larger ones in closets through which mice may enter. For cracks, common hard soap, which is usually soft enough for the purpose, may be used to fill them. It is usually soft enough to be pressed with the fingers into crevices, and no insect will venture to make its way through it. For larger holes, through which mice may come, Plaster of Paris, mixed with water to the thickness of batter, and quickly applied, will soon set, and stop the opening. Thin sheet-tin, from old fruit cans, may be tacked over the larger holes. In the spring cleaning we must consider

The Question of Moths.

The common Clothes Moth was formerly the only one that troubled housekeepers, but of late years the "Buffalo" or "Carpet Moth," has in many localities come to plague them. To keep woollens and furs from moths, two things are to be observed—1st, to see that none are in the articles when they are put away, and 2d, to put them where the parent moth can not enter. Tin cases, soldered tight, whiskey barrels headed so that not even a liquid can get in or out, have been used to keep out moths. A piece of strong brown paper, without a hole through which even a large pin can enter, is just as good. Put the articles in a close box, and cover every joint with paper, or resort to whatever will be a complete covering. A wrapper of common cotton cloth, so put around and secured, is often used. Wherever a knitting needle will pass, the parent moth can enter; carefully exclude the insect, and the articles will be safe. As to the

Buffalo or Carpet Moth.

This fortunately exists in but a few localities. No better remedy than that we gave a year or two ago has been offered.—Wet a folded sheet or other cloth, lay it over the place near the edge of the carpet, and use several hot flat-irons, moving them about from time to time so as to send the steam down through the carpet and into all the cracks of the floor, and it will kill the moths. Where this has been properly tried it has been effective.

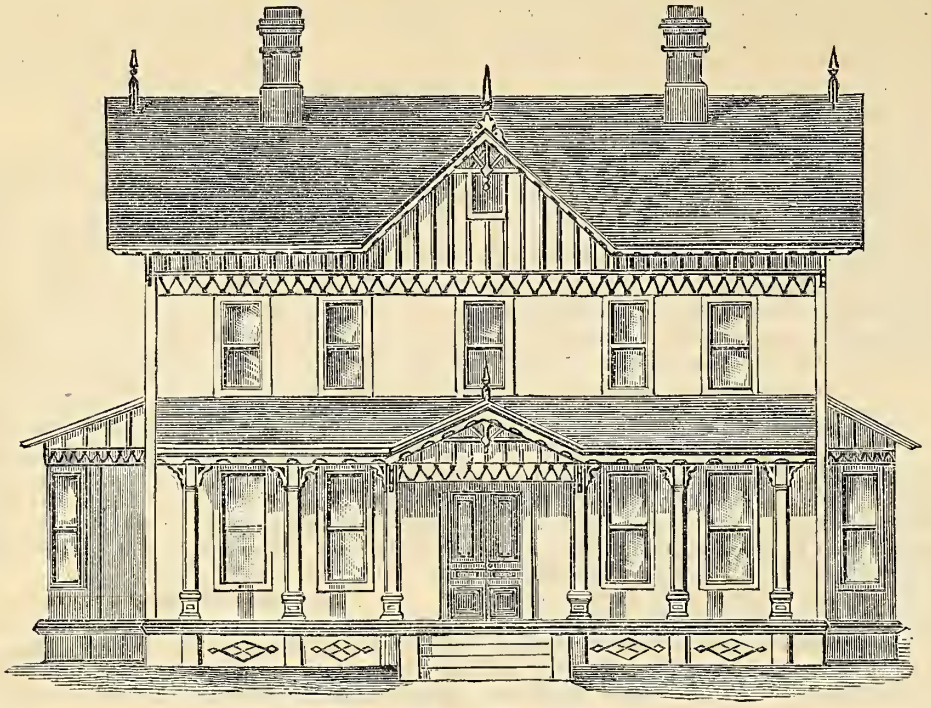


Fig. 1.—FRONT ELEVATION....[WEST.]

Country House, Costing $3,000 to $4,000.

Actual Cost, as Here Described, $3,351.

CLASS III.—FIRST PRIZE—BY MRS. WM. H. BURR, REDDING RIDGE, CONN.

[In selecting this plan from a great number in Class III., the judges "guessed" that a "housekeeper" had had more to do with the design and arrangement than an architect, though the hand writing gave them no such intimation, and they were pleasantly surprised when informed that, on opening the envelope, the designating motto was an actual "Farmer's Wife," and not an appropriation of that title by one of the sterner sex, as they had supposed. We learn that this house was built in 1879, but the planning, arrangement, materials to be used, and most economical construction, had been talked over, and much thought about, for many years previous, and no doubt with a great deal of observation and study of many other dwellings to get any new hints and suggestions. The judging committee's notes on this plan read: "A very roomy house, with plenty of closets, large attic, bath-room, hot and cold water in first and second stories; every room, even to the attic, has an adjoining chimney which will admit a stove-pipe. No water-closet shown in bath-room, though one shown in the wood-shed is very convenient. In construction, the design omits to show how the rear main-house walls are supported; piers or posts are probably intended. The estimates appear correct, though to finish up with such a variety of hard-woods, would seem to exceed the estimates, in most localities." [It will be noted below that, except the walnut, they were cut on the farm.—ED.] "The roofs are all shingled; tin would often be preferred, and in many localities be cheaper...." In the following descriptions, we do not, as usual, arrange them systematically, but follow the order of the notes accompanying the plan, with such emendations and condensing as seemed desirable.—ED.]:

After all our long study on the subject, we dedecided upon this plan as being the most economical in form of building, with the rooms just where we wanted them, and large enough to meet the requirements of our own or any ordinary family. The rooms in constant use are all on one floor—quite a necessity when a woman must have the care of and *do* much of the work in a farm house. A bedroom on this floor is essential when one has little children. The house fronts west, the sitting and bedroom being on the south side. We think the house has a pleasing and substantial looking exterior. The gables are sheathed and battened. Probably no two persons would fancy exactly the same style of finish, forms of brackets, etc. The drawings are not by a skilled artist, but are as good as I can make them, with the little time I have to spare. [Mrs. Burr, at our request, sent for the use of the artist cut paper patterns of some of the mouldings and brackets, which she could not exactly represent in the pencil sketch.—ED.] The outside painting is in two colors, the blinds being still another color. White lead and linseed oil were used, with shading mixtures added for the tinting.

The roofs are all shingled; some may prefer tin over the Verandas and Bay-windows; the expense is about the same. The

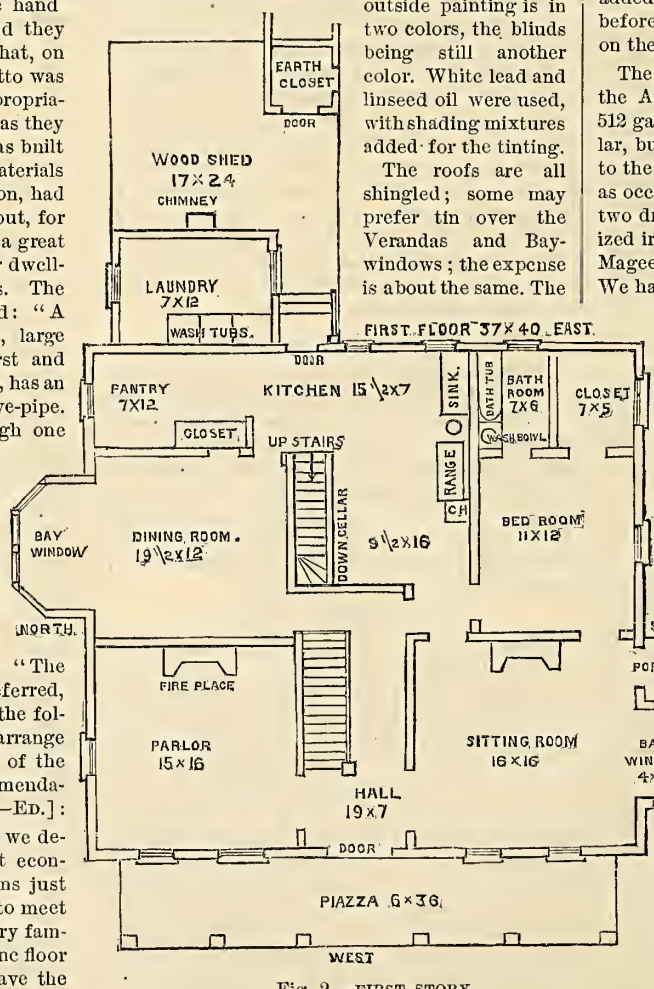


Fig. 2.—FIRST STORY.

frame was first sheathed with boards, then building paper tacked on before the clap-boards were added. The window frames and cap mouldings were made at a factory. All windows have cords and weights. They are two-light, of double French glass. Those on the rear are four-light, and have thinner glass. The head-light over the front door has stained glass.——The house is finished throughout with hard-wood, and is what they call "polished." All the pores of the wood were filled by hard rubbing with "Wheeler's Patent Filling," a preparation of ground silica found in our markets, then varnished with "Crockett's Preservative." These make no change in the natural color of the wood, and it is as easy to clean as glass. I think few people are aware of the beauty of our native woods, and the farmer who has them growing can finish more cheaply with them than with pine. With care in sawing, using the outside of the log, and drying them carefully under cover that they may not be stained, a grain of great beauty is obtained. The outside doors are of white oak, 2¼ inches thick, the front one being handsomely made. The others are 6-panel, most of them being 2 inches thick, some only 1¾ inch. Where the woods are of different kinds in adjoining rooms, the doors are made to match the rooms by gluing together half thicknesses of the two kinds of wood. We used White Oak, Maple, Ash, Butternut, Chestnut, Black Birch, and Black Walnut; (the Walnut we bought).

The Bay-windows and those in the parlor and sitting-room are panelled. The Bath Room is wainscotted with Ash and Butternut. The Kitchen is also wainscotted [that is, the lower portion of the walls are wood-work, instead of mortar]. The kitchen floor is 3-inch wide White Oak, grooved-and-tongued. We oil it twice a year. On the rest of the First Story the flooring is of 4½-inch wide pine, grooved-and-tongued. The Second Story and Attic floors are 9-inch wide pine, selected from the sheathing boards, which were of extra quality. The shingles are laid on chestnut lath. The plastering on the First and Second Stories is two coats of brown mortar, with a third hard-finish coat added. The walls and ceilings need to be finished before the casings are put on, as any lime getting on the wood before it is polished, will stain it.

The Water from the roof enters a Tank built in the Attic, of pine plank, lined with lead, holding 512 gallons. From a cistern just outside the cellar, built of stone and cemented, water is thrown to the tank with a force-pump placed in the cellar, as occasion requires. Our supply has not failed in two dry summers. The Water Boiler is of galvanized iron, holding 53 gallons. The Range is a 9-inch Magee, with water-back, not an "elevated" one. We have always burned wood in it, and with good success. The Laundry has three stationary wash-tubs, supplied with hot and cold water. In this room we have taken no precautiou against frost, there being only one brown coat of mortar. There are faucets in the cellar, by which we turn the water off as soon as we have finished washing, so there is no danger of freezing. This room also takes much rough work from the kitchen. Directly over the Range is a register, attached to a tin pipe running up to the tank-room above. This was put in to keep the tank-room from freezing, but it also acts as the most perfect ventilator I have ever seen. By pulling down one of the windows from the top in the tank-room, all smoke and steam from the range in cooking is almost instantly carried off through this pipe. We have had no trouble from freezing of the water, but you will see that the pipes are centrally situated away from outside frost, and all the rooms are comfortably warm at all times. The Tank-room is 8 feet high.

The Cellar wall (fig. 4) is of rough stone, laid in mortar, 2 feet thick, 8 feet high. The division walls are of concrete, 12 inches thick. The cool cellar is shut off from the rest by a division wall, and has a window at the north. The Smoke-room is built between the chimney and the brick pier that supports the fire-place above. The back is of concrete, with a door in front lined with sheet iron. A large

flat stone separates the large iron pot holding the smoke-making fire from the part where hams are hung. By means of a loose brick at the top, opening into the chimney, we can adjust the draft at pleasure. There are hooks for 20 hams. The Furnace room was purposely placed in the north-west corner, as from this direction most of our winter winds blow, and you can not throw much heat from a furnace against the wind. This room is lathed and plastered and fire-proof. The furnace might appropriately be called the farmer's furnace. It is simple in construction, economical in use, and perfect in its heating qualities. All through last winter, as severe a one as we ever had, the house was heated

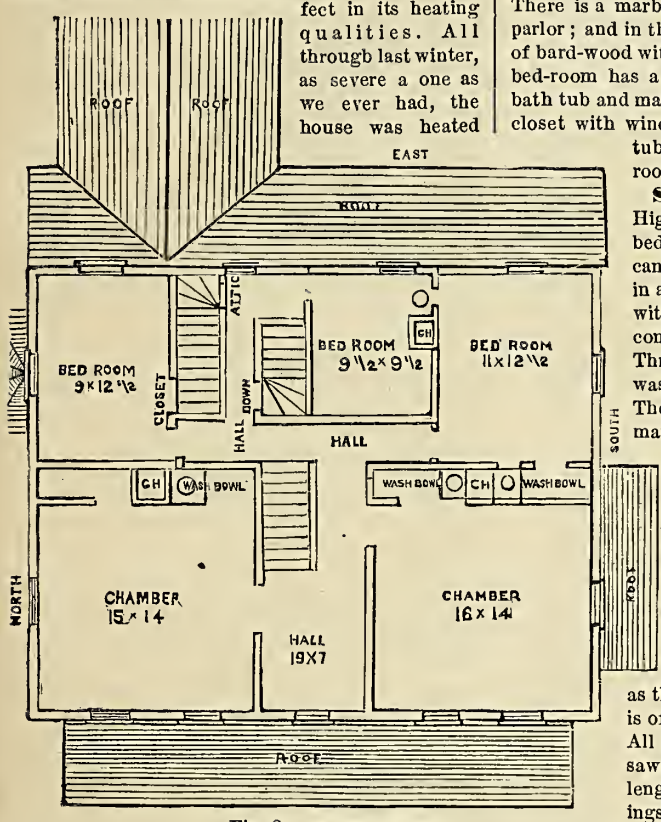


Fig. 3.—SECOND STORY.

from cellar to attic so that flowers would flourish in any room, and we could regulate the heat to within 4 degrees, the 24 hours round, week in and out. All farmers know that a large item of expense in burning wood is cutting it into short stove lengths. In this furnace it is burned as it comes from the woods, in 4 feet lengths. On damp, rainy days in summer we throw in a little dry stuff, and all chilliness is taken from the air in ten minutes' time. We estimated last winter (1880–1) that we burned not more than 8 cords of wood, and at the rate we have burned since last October we shall not use more than half that quantity this season. Friends from the city visiting us last winter whose houses were heated by expensive steam heaters pronounced our house the most perfectly heated house they were ever in. The whole expense of furnace, pipes and registers, did not exceed $150.00. In very cold weather it is only replenished twice in 24 hours.—The cellar windows are protected outside by iron bars. The cellar steps are of granite got out on the farm, 6 feet long; all other steps are of the same material. The front ones are 8 feet long, with side pieces 9 inches wide, 2½ feet high, and 3 feet long. The south one forming the floor of the porch is 4½ by 6 feet, the steps being 6 feet long. The rear porches have stones 2 by 4 feet, the steps being 4 feet long. All are cut and faced. The underpinning is 2 feet high, cut rough face. [Outside cellar entrance is not shown.]

First Floor (fig. 2).—Hight of ceiling, 10 feet when finished. On this floor we planned to save as many steps as possible. The kitchen is centrally located. The outside door is protected by the projecting roof of the wood shed. There are doors also to most other rooms and to the back stairs and cellar stairs. The sink is supplied with hot and cold water. The pantry is well supplied with drawers and cupboards.—The Dining Room has more length than breadth, and has a good closet and two cupboards with glass doors [not shown in plan], one each side the chimney, filling the space made by the parlor mantel. Underneath these cupboards is a hard-wood mantel on brackets [not shown]. A door opens from the dining room into the front hall.—The Sitting Room and Parlor have double doors connected by a wide hall, so that these rooms can be thrown together when desired. There is a marbleized slate mantel in the parlor; and in the sitting room a fire-place of bard-wood with hard-wood mantel. The bed-room has a bath-room adjoining, with bath tub and marble wash basin; also large closet with window. There are speaking tubes running to the servants' rooms above in the Attic.

Second Story (fig. 3). Hight 9 feet. There are 5 bed-rooms, and the front hall can be used as a sleeping room in an emergency, cutting it off with curtains. A door [not shown] connects the front and back hall. Three rooms are supplied with marble wash basins and hot and cold water. These rooms have also hard-wood mantels set on brackets by chimneys.

The Attic (fig. 5), has two sleeping rooms cheaply finished, also tank-room and dark closet for storing bedding, etc., with large open attic for play room, or drying clothes on rainy days.

Construction.—The first floor timbers are Chestnut, hewed one side, the bark taken from the rest, making a foundation as firm as the ground. The rest of the frame is of spruce, bought at a lumber yard. All the wood used in finishing was sawed and planed and cut into proper lengths at a Mill; also all the mouldings struck and the brackets sawed for both outside and inside work. All this is in one bill. All other wood-work was done by carpenters. The cellar was dug and stoned and the steps laid by contract, by those making that their business. The steps and underpinning were got out some time before. We have reckoned into the expense what they cost at that time. Building the chimneys and plastering were done by two good masons, we doing the tending by farm hands, but this is all reckoned in; also all lime, cement, brick, lathing, and every little thing used. For the timber and lumber used from the farm, in finishing, I have reckoned what my husband says is a large allowance, and what it could now be bought for, delivered here. All bills are given just as they were rendered to us. Probably an advance of 20 per cent on a considerable portion of the materials and on the labor, would be ample to cover the recent advance in prices. We put down as a liberal allowance, $585.00, which would raise the present total cost to $3,936.00. This is from a farmer's standpoint. An account was kept at the time of every little expenditure, which is added under the head we thought it belonged to. I have given details of

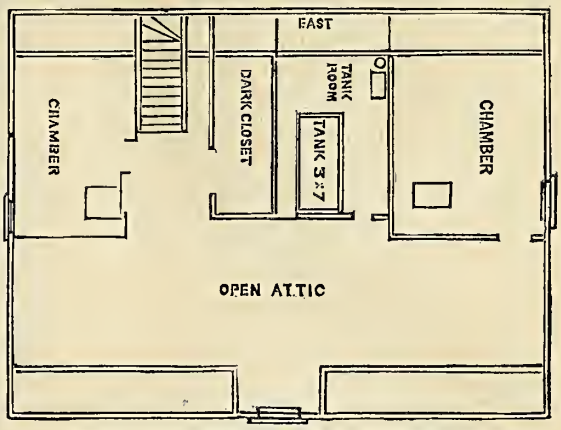


Fig. 5.—ATTIC (REDUCED SCALE)....[WEST.]

many little things, but these make one harmonious whole. Any one can get in the large things. We believe in making the farm itself contribute all it can, and I am proud of our stone-work, inside wood-work, and the furnace built under my husband's personal direction. [We do not understand the construction of the home-made furnace which "burns wood four feet long." Will send for a description of it, and if important will give engraving and further accounts of it hereafter. The location of the only Bath-room is objectionable, in that it can not be reached by occupants of the second story, and only through the first story bed-room. ED]

The Wood Shed (fig. 2) is 17 by 24 feet, out of which the laundry is taken. The door from the kitchen is protected by its roof, saving a separate piazza. Having the fuel close at hand and dry, is convenient at all seasons. The chimney for the laundry is built mostly of cement pipe.—The house stands somewhat higher than the surrounding ground surface. The waste water and that from the cistern overflow is carried off through a pipe in the cellar, into cement drain pipes, closely cemented at joints. [There should of course be a trap, or depressed bend in this, to prevent the return of noxious gasses.—ED.] I find that my sketch has not placed the front windows quite as far apart as they really are. In drawing the plans I have measured everything about the house, and allowed six inches for all partition walls. The veranda posts should be directly at the end of the 8-feet steps. There are no blinds on the south bay-windows, as we intend to add inside ones of hard-wood. The "elevation" does not do justice to the house, but it is the best I can do; I find I undertook a pretty big job for a busy house-wife.

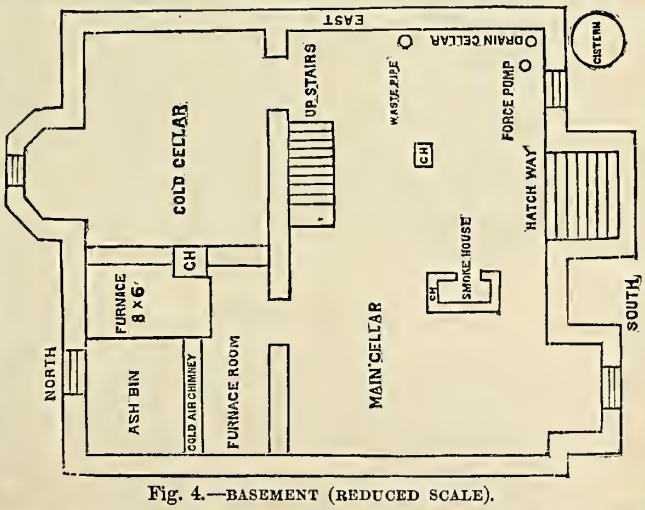


Fig. 4.—BASEMENT (REDUCED SCALE).

Prices of Material Used:—Timber $13 per 1,000 feet. Boards for cornices, trimmings, etc., $24 per 1,000 ft. Sheathing boards (from which the best were selected for upper floors), $16 per 1,000 feet; other flooring, $24 per 1,000 feet. Floor planks, $35 per 1,000 feet. Clap-board siding, $20. Shingles, $4.25 per 1,000. Lath, $1.80 per 1,000. Lime, $1.20 per bbl. (same price now). Hardware, bought in 1879, can be bought for about the same now.

The Total Cost is shown in the bills paid, viz:

Digging and stoning cellar, laying underpinning and setting steps	$300.00
Plumbing, including all tin work, gutters, valleys, leaders, etc	350.00
General Lumber bill	548.66
5,000 feet finishing lumber @ $25	125.00
Timber, and Shingling Lath	50.00
All Hardware, including nails, window weights, etc.	123.16
Building Paper	8.38
Plastering, building chimneys, bricks, lime, lath, and lathing, etc	350.00
Hand Railing and Baluster	30.00
Marbleized Slate Mantel, 4 Ceiling Center Pieces, and brackets	30.00
Making 32 Doors at Factory	54.35
35 Window frames and Cap Mouldings	59.58
Window Sash and Glass	100.93
Striking Mouldings, sawing and planing lumber, brackets, etc	87.44
4 Finials, $3; Walnut Mouldings, $11.80	14.80
Blinds, delivered unpainted	43.70
Polishing inside wood-work	150.00
Painting (mainly outside), two coats	150.00
Carpenter's Bill	525.00
Carting, $100; Furnace and Fixings, $150	250.00
Total bills paid	$3,351.00
If we add for possibly increased prices in 1882	585.00
It would make present cost	$3,936.00

Delaware Boys at Corn-Raising.

A Plan Worthy of Adoption Everywhere.

We have reported several efforts to awaken interest among the boys of single counties, such as those of Stillman B. Allen, of Boston, in his native county in Maine; Willis P. Hazard, in Westchester, Pa.; and Lawson Valentine, this year, in Orange County, N. Y.—Now Professor J. A. Reinhart, Ph. D., of Delaware College, with the experience of others as a guide, is undertaking to enlist all the Boys in that State, in a similar enterprise, and to allow a wider range for successful competition, he has arranged for *Thirty-five prizes.*—With the co-operation of the State Department of Instruction, printed circulars, with full particulars, are being sent to all the School Teachers in the State, to be announced to all scholars, and the Press of the State is co-operating. The Prizes are: 1st, $20; 2d, $10; 3d, $7.50; 4th, $5; 5th, $2.50 (all in gold); 6th to 25th (20 prizes) each a year's subscription to *American Agriculturist*, $1.50; 26th to 35th (10 prizes), Books worth $1, or more each, to be selected by the winners from a list to be furnished to them. Every successful competitor is also to receive a beautiful CERTIFICATE from the College, suitable for framing, as an honorable and permanent record of his work. These thirty-five are the "GENERAL DELAWARE COLLEGE PRIZES," and are limited to boys under 18.—Additional to these are the "DEAN DELAWARE COLLEGE PRIZES," the Hon. Wm. Dean having authorized the College to offer cash prizes of $30, $20, and $10, limited to young men under 21, and requiring *half-acre* plots. (If the first of the prizes be won by any member of Newark Grange, $20 will be added by that Association, making it $50.)—Full printed particulars about all the Prizes can be obtained by addressing Prof. J. A. Reinhart, Newark, Del. As an example to others elsewhere, we give a brief outline of the plan—not having space for the whole:

Any Boy, residing in the State, not having reached his 18th birthday prior to application, can become a competitor by sending his name and address to Prof. Reinhart, before May 15th.—The competing plot must contain exactly one quarter acre (40 square rods, or 10,890 square feet). The shape of the plot is left to the convenience of the competitor. No rows or hills are to be nearer to the border than 12 inches (otherwise some nutriment might be drawn through the roots from adjacent land). Under this limitation there will be the least waste border in the plot nearest square. 5 by 8 rods is a quarter acre, 6¼ rods by 6 rods and 2½ feet, or 100 feet wide by 108 $^{9}/_{10}$ feet long, make quarter-acre plots very nearly).—The ground may be plowed and harrowed for them, but all other work: fertilizing, planting, cultivating, topping if done, and harvesting, must be done by each competitor himself. He is to make his own selection of the variety of corn, the fertilizers, mode of culture, in hills or drills, frequency of hoeing or cultivating, etc. Of course he will gather all the information he can by reading, inquiry, etc. This attention, investigation, and observation, will be worth far more than any prize, to each and every boy who enters the contest, and we advise every Delaware farmer having boys of 8 to 18 years old, to allot to each boy a plot and encourage him to join the company. It will be worth to each, in the future, far more than to give him an acre of land outright. We suggest, also, to promise each boy a certain part of the corn grown—*at least* all he shall produce over an ordinary crop.

The corn is to be gathered and measured within three days of October 18, before or after. The measuring of land and crop, harvesting, etc., are to be under the supervision of three disinterested practical farmers of the vicinity, to be named or approved by Prof. Reinhart. The corn is to be weighed on the cob, and 75 lbs. reckoned as a bushel. Blanks will be furnished, which are to be filled out with all particulars, and sent to the college by November 1, signed by the competitor and the local Committee of three.—75 lbs. of the average ears are to be sent to the Agricultural Department of the College, or to the R. R. Depot in Newark, Del. The exhibition of the corn, and the time of awarding Prizes, will be duly announced. The Money Prizes will be awarded to no plot yielding less than 20 bushels (80 bushels per acre); and the other prizes to no plot yielding less than 17½ bushels (70 bushels per acre).

Making the Crows Useful.

W. S. Morgan, Somerset Co., Pa., in view of the fact that the corn-planting season is at hand, gives his experience, which we commend to those who look upon the crow as an enemy. He says: "For the past five seasons, I have, just before I expected my corn to come up, sowed on the field about a a quart of corn to each acre, and repeated the operation as often as necessary, until the corn was so large that the crows could not pull it up. If the corn is soaked until tender, they prefer picking what they want to eat from the surface rather than to pull the young plants to get it. The cost of the corn thus sown is but a trifle; as a result I have a great number of crows almost constantly on my corn field, and after they have been satisfied with corn they will still pick up all the insects, grubs, and cut worms they can find, *as a dessert.* In raising fifty acres of corn since adopting this plan, I have not lost a hundred stalks by crows and cut worms combined."

Climbers and their Supports.

The use of climbing plants is chiefly confined to verandas and porches, and occasionally to cover an unsightly fence. They may often be used elsewhere with pleasing effect, and probably would be more frequent were it not for the trouble of providing suitable supports. The old style with the delicate and beautiful Cypress Vine, is to place a pole 8 or 10 feet high, and run strings from wooden pins placed in a circle around it to the top of the pole. This, when covered with vines makes a pretty pyramid, but it is so formal that one does not care for more than one in a garden. In providing supports, whatever else they may be, they should be strong. By the end of summer they are covered with a great weight of foliage, and the winds are apt to make a wreck of them just when the plants are at their best. Common poles will become rotten by the end of summer. If locust can be had, a piece of this, no matter if crooked, can be placed in the ground and a pole of any kind spiked to it. In some places, to make a partial screen, poles may be set 10 feet or so apart, and a strong cord run in festoons from one to the other. When such a support is well covered by climbers, it is very pleasing. For low climbers, such as the hybrid varieties of Clematis, a young red cedar is excellent. This should have its branches cut to form a pyramid and may be used with the bark on. If prepared before hand, the bark may be removed, and after the wood is seasoned, it may be painted some brownish green color. Such supports will last for years, and when covered will not have a formal appearance. A support of this kind, covered with Clematis Jackmannii, in the garden of a neighboring friend, was worth going far to see.

Compacting the Soil.

"How is it," once asked a young friend of us, "that every cutting you touch will grow, while only a small part of mine succeed?"—We were both amateur gardeners and as neighbors, indulged in a friendly rivalry. We gave him the secret of our "touch," which was, to always press the soil firmly around the cuttings; after this he had no cause to complain of failure. This matter of bringing the soil in close contact not only with cuttings, but with rooted plants and seeds, is of the greatest importance, and its neglect is a frequent source of failure. If the soil is left loosely around a cutting or around a seed, the minute root in either case, as it pushes, may fail to come in contact with the needed moist soil and perish for the want of it. When ripe wood cuttings, such as those of the currant are set out in the open ground, and one lot have the earth thoroughly pressed against their lower portion, even pounded down to make sure, every one will grow. If this is neglected more or less will fail. So in setting out plants, such as those of cabbage, celery, etc. The market gardeners make sure that the soil shall be brought close to the roots, by going along the row and pressing it firmly to the plant with the feet. In an article we printed a few years ago, Mr. Peter Henderson showed that success with raising his crop of celery plants was due to the fact that, after sowing the seed he had the whole surface of the soil of the bed well patted down with the back of the spade. The end is accomplished on a large scale by the use of a roller, but in small beds the spade is an excellent substitute. In setting out trees or shrubs, the more carefully the soil is filled in and worked in among the roots, and firmly pressed—not stamped down, with the foot, the greater the chances of success. Even in laying turf or sods, the roots of the grass should be brought in close contact with the soil by the use of a "beater," a piece of heavy plank with a handle, or by beating down with the back of the spade.

Protest against Using "Foreign Names."

Every now and then we receive a protest of which the following, just at hand, is a fair sample: "I do wish OUR *American Agriculturist*, which aims to supply information for the common people, who are not educated in foreign languages, and which usually does it so well, would not cling to the use of foreign names. It hardly ever speaks of a common plant or flower without attaching to it (generally in parenthesis), some foreign name, often a jaw-breaking one. For example, in describing the common plant "Burning Bush," on page 21, why call it also '*Euonymus latifolius*'? It always seems to me like an effort to show off one's learning, and on a par with the doctors who write their prescription in Latin or Greek, and hieroglyphics, though I suppose in this case it is done to keep the knowledge to themselves, or perhaps to mystify their patients into paying for much learning, and paying a large price for a simple medicine. Why only yesterday a Doctor was called to see a member of my family suffering from bowel complaint—and he gave us a prescription to the druggist which read: ℞ *Rubus villosus Rad. decoct.* ℥ viii.—*Scrib. coch. mag. aa hora.*'—Out of curiosity, I asked the drug clerk what this meant, and as near as I understood it, in plain English it would read: 'Send 8 ounces of Blackberry-root tea or decoction and write: take a tablespoonful each hour'...."

A little examination will show that the above criticism has no just foundation. There are a number of intelligent civilized nations who speak and write entirely different languages, and each one of which is making advances in useful knowledge and science—notably the English, German, French, Italian, and Spanish. And what one learns or discovers soon becomes available to all the others. But the words in describing even the most common things, are scarcely ever the same in any two languages. For example what we call the "potato," the German calls "kartoffel," and the Frenchman calls "pomme de terre."—It is therefore of great importance to have and use some *one* language only among all civilized nations, for the description of objects, scientific terms, plants, medicines, diseases, etc., so that all will get the same idea from the words used. Take this illustration: When on a health tour in Europe our supply of a particular medicine of great importance was exhausted. But having the home physician's prescriptions written out in the scientific language used by physicians the world over, we laid it on the table of an Italian druggist in Rome who did not know a word of our language. He, without a moment's hesitation, put up the medicine just as it was done at home. The same thing occurred in Berlin and in Paris.

The discoveries in Germany, in Italy, in France, etc.—in botany, in medicine, in any branch of

science—are at once available to us, because we use the same scientific terms in description. Even in different parts of our own country, very different names are given to the most common medicinal plants; but the educated physicians, by the use of fixed scientific terms, and the signs denoting quantities, know that any competent druggist from Maine to California will understand exactly what is to be done with a prescription. In fact it would be positively dangerous to do differently. Even in the same city, different druggists would often put up a different mixture, if the common, variable and changing names were used in prescriptions.

But every living language, in daily use, is constantly undergoing changes in meaning or shades of meaning, and there are many words that have a very different significance in this country and in England, even in different sections of our own country. Suppose all the civilized nations should agree to make the English, or the French, or the German, a common language for describing things. There would have to be an international congress every few years to revise the nomenclature.—But the Latin and Greek languages as they were formerly used and fixed in the older books, are different from any now spoken or written; they are called dead languages; but they were full, comprehensive, and expressive, and do not change from century to century. So by general consent and custom, all civilized nations now use the Latin or Greek words for all matters common to all. When we describe a plant or flower, and add its scientific name, every other nation knows to what we refer, and when we read of new discoveries in foreign journals we know just what is meant.

The terms adopted usually imply some quality. Thus: "Euonymus" is the name applied to several plants having some properties in common. If we see the words Euonymus *latifolia*, we know at once that the Latin word *latus* means "broad," and that *folium* means a leaf. So *Euonymus latifolius* means the Euonymus that has broad leaves. And the German, or French, or Italian reader knows the same thing. And so of all other names of plants, of diseases, etc.—It is only a matter of becoming accustomed to words. Our readers will find little more difficulty in learning to call a plant Euonymus instead of "Burning Bush." Indeed this last word is often applied to quite different plants that have red leaves or berries.

What Kinds of Vegetables and Flowers to Choose.

We have before us a list of **2,316** different varieties of desirable flowers, and almost as large a list of vegetables, etc. The inexperienced, wanting only a few varieties in a garden or flower bed, is bewildered, and puzzled what to select. To help such, we append a few leading kinds, which, if not everywhere the best, have the merit of being generally good, and any one entirely unskilled, and having no trustworthy adviser at hand, may safely select any of the following

Garden Vegetables.

BEANS: (Bush) Valentine, Mohawk, Golden Wax; (Pole) Lima, Giant Wax.

BEETS: Egyptian, Bassano, Long Dark Blood; (Mangels) Kinver's Globe.

CABBAGE: For early, Wakefield; for medium, Winningstadt; for late, Flat Dutch, and Drumhead Savoy.

CAULIFLOWER: Early Snowball; Paris, for late.

CELERY: Golden Dwarf, Giant White.

CORN, SWEET: For early, Crosby's Early; medium, Triumph, Egyptian; late, Stowell's Evergreen.

CUCUMBER: Early Russian; later, White Spine.

EGG PLANT: N. Y. Improved Purple, Black Pekin.

LETTUCE: Early Simpson, Tennis Ball; and later, Black Simpson, Hanson.

MELONS: (Musk) Ward's Nectar, Christiana, Nutmeg, Cassaba; (Water) Mountain Sweet, Gipsey.

ONIONS: Red Globe, White Globe, Yellow Danvers.

PARSLEY: New Fern Leaf, Extra Moss Curled.

PARSNIPS: Long Smooth, Short Round.

PEAS: For early, American Wonder, Alpha; later main crop, Champion of England.

PEPPER: Large Bell, Cayenne.

RADISH: French Breakfast; later, Long Scarlet.

SQUASH: Early Summer Crook Neck; later, Hubbard, Boston Marrow.

TURNIPS: Early Dutch; later, Red-top Strap Leaf; winter, Long White French.

TOMATOES: Acme, Trophy, Livingston's Perfection.

Garden Flowers.

AGERATUM: Imperial Dwarf; Album.

ALYSSUM (Candy-tuft): Sweet; Wierzbeckii.

AMARANTH: Princess of Wales; Tricolor.

ANTIRRHINUM (Snap-dragon): Caryophylloides.

ASTERS: Giant Emperor; Washington; Victoria.

BALSAMS: Solferino; White Perfection.

CALCEOLARIA: Hybrida.

CALENDULA (Marigold): Meteor.

CAMPANULA (Canterbury Bells): for hardy perennial, the Pyramidalis; for hardy annual, the Pentagonia.

CANDYTUFT: White; Carter's New Carmine.

CARNATION (Pinks): Grenadine.

CELOSIA (Cockscomb): Japonica; Glasgow.

CENTAUREA: Americana; Candidissima.

CHRYSANTHEMUM: Tricolor; Japonicum.

COBÆA SCANDENS.

CONVOLVULUS (Morning Glory): Striped; Crimson.

CYPRESS VINE: Rose; Scarlet.

DIGITALIS (Foxglove): Alba; Purpurea.

FORGET-ME-NOT: Mixed.

GILIA: Nivalis; Tricolor.

GLOBE AMARANTH: Golden Yellow; White.

GOURDS: Bottle; Hercules' Club; Lemon.

HELICHRYSUM ("Everlasting"): mixed.

HONESTY: Purple.

LARKSPUR: Bismarck; Emperor.

LOBELIA: Alba; Bicolor.

MIGNONETTE: Golden Queen; Old Sweet.

MIMULUS (Monkey Flower): Cardinalis; Duplex.

NASTURTIUM: Crimson; Rose.

PANSY (Heart's-Ease): Snow Queen; Emp. William.

PEAS (Sweet): Violet Queen; Butterfly.

PETUNIA: Countess of Ellesmere; choice mixed.

PHLOX DRUMMONDII: Coccinea; Victoria; mixed.

POPPY: Carnation.

PORTULACA: Aurea; Splendens; mixed.

STOCKS (annual): Large-flowering; Tree; the mixed.

THUNBERGIA: Alba; Aurantiaca.

WHITLAVIA: Grandiflora (blue); Alba (white).

XERANTHEMUM (Everlasting): Album; Cæruleum.

ZINNIA: Coccinea; Pumila; the mixed.

The Tuberose and Gladiolus.

These bulbs have been produced of late years in such quantities that they are now sold at prices which bring them within the reach of all. The Tuberose, so valued for its fragrance, is often injured by being planted too early. The first of the present month is soon enough to start the bulbs; they may be planted in pots or boxes of soil, and placed in the green-house, or in a warm room, and they will be sufficiently advanced to be planted in the open ground by the last of the month or the early part of June. They should have a warm rich spot, and the flower stalk, as it developes, be supported by a slender stake. The Gladiolus, on the other hand, is almost hardy. It affords a wide range of colors, and a bed of them is very showy. Mixed, unnamed bulbs, can be bought at a much less price than the named kinds. They should be planted a foot apart with the top of the bulb at least two inches below the surface. It is well to plant a portion of the bulbs every two weeks until the first half of June to insure a continuous bloom. It is well to stake the flower stalks to keep them from being broken down by the wind just as they are in their prime.

Strawberries.—When to Plant.

The above question is often asked, and its answer must depend upon circumstances. One fact about the strawberry plant should be known, and this will enable each one to decide for himself. The plants that are sent out by nurserymen are those that were formed last year by the runners from old plants taking root in the soil of the bed. If these are taken up in the usual way and planted in a new bed—it may be after the lapse of several days—they require a whole season to get established and become sufficiently strong to bear a crop. If these plants are set this spring they will bear a crop next spring; if such plants are set next autumn, they will require all of next season to grow in, and while they may produce here and there a few berries, they will give no real crop until the following year. Growers of fruit for market set a share of their plants in the fall, because they then have leisure, and the ground is in excellent condition. If the plants are made to strike root in pots, these in early autumn may be planted in beds without any disturbance of their roots and will give a fair crop next spring. Such plants are more expensive than others, and if a crop of fruit is wanted next spring, it is better to set out the plants now. Making the rows two feet apart, and setting the plants one foot apart in the row, as a general rule, is best, but there may be reasons for putting them further apart, as where land is plenty, and the horse cultivator is to be used.

Notes on the House Plans.

No other single topic engages the attention and interest of so many readers as the House Plans and Notes upon them.—Not only those who contemplate building soon, but almost every house-keeper studies the arrangements and conveniences, notes items in which her own is superior, and gathers suggestions for improvements—and the other head of the household is similarly interested, though not always to the same degree. The Editor of a prominent Western Journal, in a private letter, writes:...."Your prize house plans, and familiar talks and explanations, are contributing very greatly towards improving the homes of the country, new and old...." Mrs. Woodruff's suggestions on "Conveniences in Houses," on page 210 of this paper, may be read with profit by all house owners, house builders, and by architects also.

Any simple arrangement, or re-arrangement, of kitchens, closets, pantries, sinks, position of cook stoves, stairs, doors, or otherwise, that will save only a hundred steps a day—one or more of which may be easily done in nine-tenths of all the ordinary houses in existence, and may be readily provided for in building new ones—will amount to a very great saving of time and strength in the course of one year even. Ten needless steps an hour, or a hundred a day, amounts to thirty-six thousand five hundred steps a year, equivalent to a useless journey of over 150 miles on foot, or 1,500 miles in ten years, all of which may be avoided by a trifle of forethought in planning. American house-keepers, and especially farmers and mechanics' wives, have quite enough of necessary exercise, without incurring that which reading and a little forethought would save.

CORRECTION.—In the first floor plan given last month, a mistake of the draughtsman figured the parlor 10 by 15 feet. A glance at the form and dimensions of the room, as sketched, or an application of the scale, would show that it should be 15 by 15 feet.—The contributor of the "Mount Union" plan, noted in March (p. 95), is Mr. A. F. Hillier (not Hilley).

Grafts and Stocks.—We advise cutting cions in the fall rather than early spring. In part to insure their being perfectly dormant, and in part that they may be in a more vigorous condition. A shoot exposed to the very severe winter, if it remains on the tree, may not show that the cold weather has had any perceptible effect upon it; if, however, at the end of such a winter it is cut and used as a graft, the shoot will very likely give evidence that its vitality has been weakened. Two-year-old seedlings are not better than some year-old for stocks for root-grafting, and even are not regarded as good, they are not worked as readily as younger ones, and require more room in storing.

The Children's Bed.—In making preparations in the flower garden, do not forget the children's bed. If they are old enough to take care of it themselves, all the better, but let there be a place filled with common and pleasing flowers, where they can go and pluck at will, and not be in fear of the injunction, "don't touch."

The Use of Brains in Farming.

How Soils and Crops Differ.—Soil-tests for determining the Needs of Plant-food, and the best Materials for Supplying them.

BY PROF. W. O. ATWATER.

What is the best fertilizer for corn, for potatoes, for cotton? Such questions will always he asked, and so long as soils and seasons differ, the true answer will be: There is no hest fertilizer for any crop, what is advisable in one case is not in another, and the only way to find out what is best for a farm or a field is to study it by careful observation and experiments. From last season's experiments I selected (March *Agriculturist*, p. 94), one illustrating what a single farmer learned by his own tests. I now give several which exhibit the different action of the same materials on different soils, with different crops, and in different seasons, choosing some that have been repeated year after year with the same fertilizers on the same plots. Some of the Experimenters are already well known to older readers of the *American Agriculturist* by the excellent work they have done and reported from season to season.

Mr. Bartholemew's Experiments.

These have now continued five years, have covered nearly one hundred plots, and are the most instructive and valuable field experiments ever made, to my knowledge, hy a private individual iu this country. In every trial, each plot receiving Phosphoric Acid has given a more or less satisfactory return, and every one without Phosphoric Acid has failed. Nitrogen and Potash have each increased the yleld, but with corn neither has brought enough increase to pay the cost, while potatoes have responded profitably to both, except in very had weather. That is to say, with potatoes, Nitrogen in Nitrate of Soda, in Sulphate of Ammonia, in dried hlood or in Peruvian guano; Phosphoric Acid in "plain" Superphosphate (dissolved hone-hlack), and Potash in Muriate of Potash, have each and all, both singly and combined, increased the yield enough to much more than pay their cost. But with corn, Superphosphate only has proved profitable, and the loss with the Nitrogenous manures and the Potash Salt has been larger or smaller in proportion as more or less was used.

Mr. Newton's Experiments.

Here we have, with corn, almost exactly the opposite result. Potash, indeed, is as ineffective as in Mr. Bartholemew's experiment. But the Phosphoric Acid so useful with Mr. Bartholemew, has on Mr. Newton's land scarcely any effect at all. The money invested in the Superphosphate and in the Potash Salt is thrown away. But the Nitrogen, which helped Mr. Bartholemew's corn so little, is uniformly efficient on Mr. Newton's soil. The corn responds largely and profitably to Nitrogen in every form and on every plot, and rises and falls regularly as more or less is applied. Even in the very unfavorahle season of 1881, when everything else failed, 72 lbs. of Nitrogen in 450 lbs. Nitrate of Soda, brought 54 hushels of shelled corn per acre. The cases in which corn responds decidedly to Nitrogen are so rare that when Mr. Newton's report came in, season before last, I—well, asked him to try again. He did so, and with the same result, except that the bad weather reduced the crop, and writes: "So you see Nitrogen is king of my hill."

MR. HICKS has a still different experience. His soil demands Potash, Nitrogen helps a little, Phosphoric Acid more, and Potash most of all.

PROF. THORNE'S corn suffered from severe drouth and shows no very decided results. The other plots, not given here, told a very decided story, to wit: that Nitrogen posltively injured the crop. Indeed, there are numerous cases where Nitrogen reduces the yield of corn even in the most favorable seasons.

PROF. SANBORN, of the New Hampshire Agricultural College, reports a case in which Sulphate of Ammonia has utterly demoralized the corn. What the reason is I should he very glad to know.

EXPERIMENTS WITH POTATOES, CORN, AND COTTON.

YIELDS PER ACRE WITH DIFFERENT FERTILIZERS.

MR. W. J. BARTHOLEMEW, Putnam, Conn.—*Soil:*—Hill land, dark loam, compact subsoil; worn out meadow. Experiments all in same field; those of 1879, '80, and '81, repeated with same crop and fertilizers on same plots each year. *Weather:*—1878, favorable; 1879, cold, unfavorable; 1880, favorable; 1881, cold, wet, very unfavorable.

MR. W. C. NEWTON, Durham, Conn.—*Soil:*—Hill land, dark loam, loam subsoil, moist; old grass land. Experiment of 1881 on adjoining portion of same field as 1880. *Weather:*—1880, favorable; 1881, unfavorable.

MR. EDWARD HICKS, Old Westbury, L. I.—*Soil:*—Sandy loam, loam subsoil. Experiment of 1880 on worn out pasture; experiment of 1881, after fodder corn, manured with a "complete fertilizer." *Weather:*—1880, very favorable; 1881, dry, very unfavorable.

MR. C. E. THORNE, Farm Manager, State University, Colnmbus, Ohio.—*Soil:*—Upland, clayey loam; naturally wet, but drained. *Weather:*—Severe drouth.

PROF. W. C. STUBBS, State Agricultural and Mechanical College, Auburn, Alabama.—*Soil:*—Upland, sandy, clay subsoil; very dry; worn out grass land. *Weather:*—Unfavorable.

No. of Fertilizer		0	A	B	C	D	E	F	G	H		00
Fertilizers per Acre.		No Manure.	Nitrate of Soda, 150 lbs.	Dissolved Bone Black, 300 lbs.	Muriate of Potash, 150 lbs.	Nitrate of Soda, 150 lbs. Dissolved Bone Black, 300 lbs.	Nitrate of Soda, 150 lbs. Muriate of Potash, 150 lbs.	Diss'd. Bone Black, 300 lbs. Muriate of Potash, 150 lbs.	Nitrate of Soda, 150 lbs. Diss. Bone Black, 300 lbs. Muriate of Potash, 150 lbs.	Plaster, 200 lbs.	Farm Manures.	No Manure.
Valuable Ingredients per Acre.			Nitrogen, 24 lbs.	Phos. Acid, 48 lbs.	Potash, 75 lbs.	Nitrogen, 24 lbs. Phos. Acid, 48 lbs.	Nitrogen, 24 lbs. Potash, 75 lbs.	Phos. Acid, 48 lbs. Potash, 75 lbs.	Nitrogen, 24 lbs. Phos. Acid, 48 lbs. Potash, 75 lbs.	Sulphuric Acid and Lime.	All, in varying proportions.	
Cost per Acre			$5.63	$5.25	$3.38	$10.88	$9.00	$8.63	$14.25	$0.80	var'ble	
Mr. Bartholemew	Potatoes, 1878, bushels	130	162	200	125	210	....	220	250	150	....	....
	Potatoes, 1879, "	46	42	78	46	114	52	115	130	....	....	56.
	Potatoes, 1880, "	78	90	112	116	112	112	114	152	....	....	62.
	Potatoes, 1881, "	30	37	46	37	45	39	64	88	....	....	44.
	Corn, 1878, "	17.7	15.1	39.9	19.1	41.9	21.1	43.1	51.7	....	49.8	....
	Corn, 1879, "	7.7	7.4	36.5	7.7	41.4	7.1	42.0	45.7	....	36.0	8.5
	Corn, 1880, "	22.2	20.1	43.2	24.7	45.1	24.0	52.8	50.0	....	....	....
	Corn, 1881, "	4.5	5.5	10.2	7.5	13.1	3.5	21.2	24.9	....	....	8.8
Mr. Newton	Corn, 1880, "	22.5	42.5	27.5	25.0	42.5	45.0	22.½	52.8	....	....	25.0
	Corn, 1881, "	13.8	22.5	13.8	15.0	23.8	23.8	13.8	23.3	....	....	12.5
Mr. Hicks	Corn, 1880, "	46.8	50.3	60.4	67.8	60.3	72.0	71.0	70.0	....	....	46.9
	Corn, 1881, "	14.8	24.6	20.8	32.3	21.4	26.9	26.8	26.3	....	....	15.0
Mr. Thorne	Corn, 1881, "	40.0	44.3	46.6	48.6	50.3	44.9	52.0	49.1	....	43.7	35.4
Prof. Stubbs	Cotton, 1881, pounds	587	805	1,162	564	1,599	932	1,219	1,541	....	....	345.

EXPLANATIONS.—The fertilizers supplied Nitrogen, Phosphoric Acid, and Potash, singly in *A*, *B*, and *C*; two by two in *D*, *E*, and *F*; and all three together as a "complete fertilizer" in *G*. Nearly all the experiments included several plots with other fertilizers besides those given here. The plots were one-tenth or one-twentieth acre each.

REMARKS.—In Mr. Bartholemew's experiments, Phosphoric Acid was uniformly efficient. Nitrogen and Potash had but little effect on corn, but were both profitable for potatoes whenever the weather was not too unfavorable. ——In Mr. Newton's experiment, nothing had much effect except Nitrogen, which was very efficient. On plots not included here, the complete fertilizer, with 450 lbs. of Nitrate of Soda per acre, brought over eighty bnshels of corn per acre in 1880, and even in the very bad season of 1881, 450 lbs. of Nitrate of Soda alone brought the yield up to nearly 60 bnshels.——In Mr. Hick's experiment, on the other hand, Potash is the most effective ingredient.

Fertilizers for Cotton.—Nitrogen in the Southern States.

MR. STUBBS' experiment with cotton, is very interesting. The figures cover only part of the experiment, and this is only one of a considerable number made by him during several years. His conclusions alone would make a long article. He finds that:

(1) "Our soils whieh result from disintegration of metamorphic rocks (principally hornblendic and feldspathic), need a little Nitrogen, much soluble Phosphoric Acid, and no Potash for cotton."

(2) "Our great want, and it seems to prevail through the older Cotton States (unless it be on the black cretaceous prairie cotton belt of Alabama, which has not been thoroughly tested), is soluble Phosphoric Acid. On worn out soils a small amount of Nitrogen is required."—A fertilizer with three per cent of Nitrogen, and ten per cent of soluble Phosphoric Acid he finds to the purpose.

(3) Phosphoric Acid hastens, and Nitrogen retards the maturing of the crops.

(4) Cotton seed and cotton seed meal are as effective as any of the other nitrogenous fertilizers, such as dried blood, Sulphate of Ammonia, or Nitrate of Soda, and far cheaper and more economical.

The Cotton States import from the North, the East, and the West, from England, from South America, and from the Islands of the Sea, millions of dollars' worth of Nitrogen. If they will use a home product instead of ransacking the world and paying their money for far costlier and no better articles, if they will praetice the doctrine that Prof. Stubbs and others are praetising so forcibly, the saving will he incalculable.

Commercial Fertilizers and Farm Manures.

One thing that impresses me more and more every year as I look over the results of each season's experiments, is that the proper use of commercial fertilizers in most eases, is to supplement the manures of the farm. Thus, Mr. Fairchild, whose experiment was quoted in March, and who has excellent success with commercial fertilizers, finds that a small quantity of stahle manure with a dressing of bone and potash salts, does better than any thing else he has used. He uses for corn, per acre, twelve loads (on a wagon that carries ahout 30 bushels), or one-third of what he would ordinarily call a fair dressing of stable manure, with 200 lbs. of fine bone and 150 lbs. of Muriate of Potash per acre, the two latter costing seven dollars. This has brought, during each of the past three seasons, on very poor land, about 65 bushels of shelled corn per acre and a nice growth of stalks, and has left the land in very gobd condition for the next crop. For example, in one case, oats the next season with no further manuring yielded 40 hushels per aere.

Mr. Bartholemew likewise gets far better results from a light dressing of stable manure with a little Superphosphate, than with a large dressing of either farm manure or of commercial fertilizers alone.

If there is one thing above another that is taught by the testimony of the experimenters, and by the hundreds of reports of their work sent me during the past five years, it is that, as I have so often said, the only way to find what fertilizers may be used with profit, is by careful observation and experiment. I gladly second the advice repeated once more hy the editor of the *American Agriculturist* to its readers, to experiment for themselves.

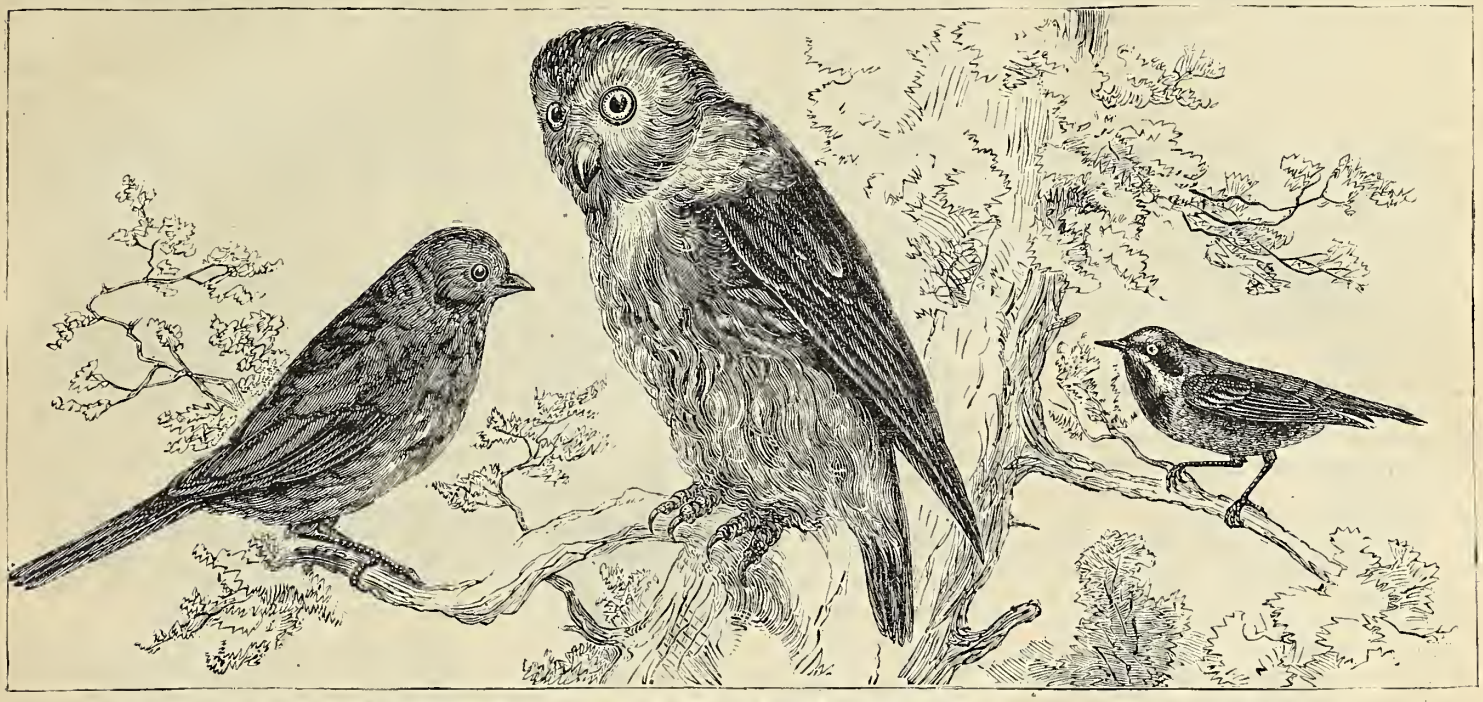
House Plants Out of Doors.—It is too often the case that plants from the window, when brought out, are put in a place where they are seldom seen, and either grow up out of shape, or are so dried, that they dwindle. If the plants are to go back in autumn, place them where they will be seen, and kept in shape by pinchings; set the pots on a layer of coal ashes, to keep worms from entering them. Give them partial shade, and do not let them suffer for lack of water, or allow insects to damage them.

Three Spring Birds.

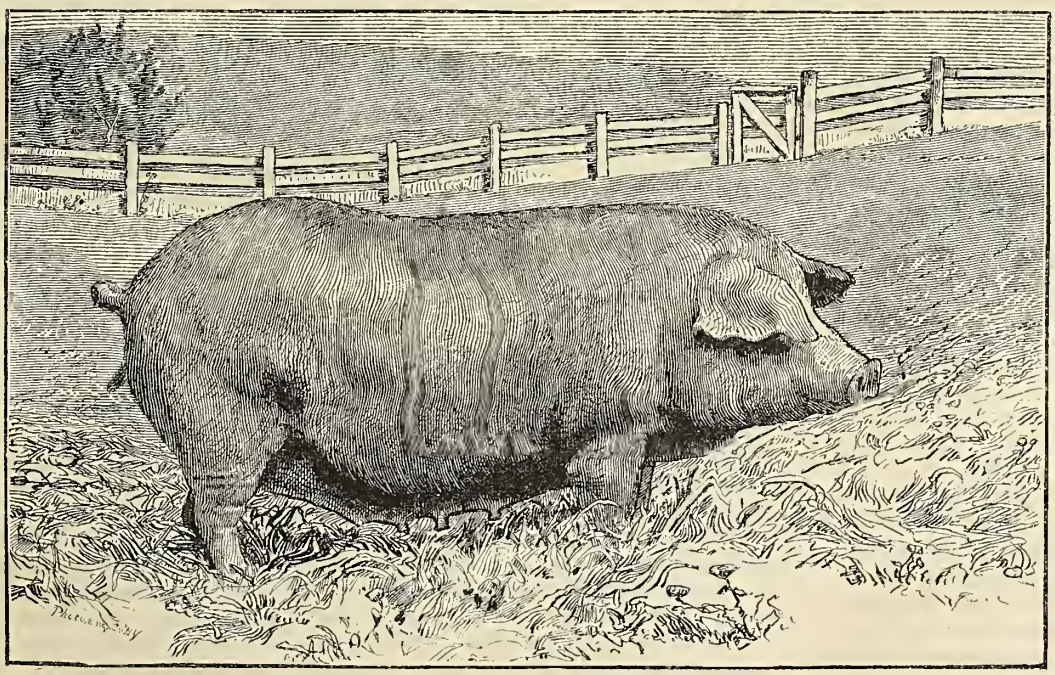
The Fox Sparrow, during the season of its migrations, is a common bird in the United States east of the Mississippi River, but is not known to breed in any part of this country. This is the largest and handsomest of all our sparrows; length, about seven inches; color, a rusty-red above, with small ashy streaks on the head, and larger ones on the back; wings rusty, with two slender bars of white; beneath, white, with many rusty blotches. The Fox Sparrow moves northward earlier than the White-throated Sparrow, and reaches the latitude of Boston about the middle of March, where it often remains until the 20th of April, when it passes northward to its breeding grounds in the wooded districts of the fur countries. Its nests are sometimes made in trees, but are usually placed on the ground, where they can be partially concealed with mosses, tall grass, or shrubs. The eggs, five usually in a nest, are oblong, light bluish-white, and thickly spotted with rusty brown. When the nest is approached, the female bird uses various artifices to lead the intruder away. Returning, this sparrow passes rapidly southward in October, and seldom stops for any length of time on its way to its winter home. It is found in South Carolina, and the neighboring States, from November to April. These birds keep in small flocks during their stay in the United States, and seldom mingle with other species of sparrow which may be in the vicinity. They are very shy, pass most of the time on the ground in the edges of thickets or moist woods; scratch like hens, and feed principally on seeds. These sparrows are usually silent, only occasionally uttering a low, soft call note, except in spring, when the male becomes remarkably musical, and ranks among the sweetest of feathered songsters.

The Acadian Owl is one of the smaller and prettier representatives of the Owl family. It is found in nearly all parts of the United States. Hight, six to eight inches; general color, olive brown, with the head streaked, back spotted, and the tail barred with white; white beneath, with blotches of reddish chocolate. The love notes of the Acadian Owl resemble the noise made by filing a large saw, and, on this account, it is sometimes called the "Saw-whet" owl. It has also the power of changing the apparent direction of the sound of its voice, and is quite an accomplished ventriloquist. Its eggs, three to six for each nest, are white and nearly globular. They are often laid in abandoned crows' nests, or in the hollow of trees a short distance from the ground. This owl breeds more freely near the Atlantic Coast than inland. It is more social than most species of owl, several being sometimes seen in company; it is also quite tame. Specimens have occasionally been caught in large cities. During the day it can be easily captured, but at night it is active and vigilant. When wounded it frequently feigns death. It destroys field mice and also small birds.

The Golden-Winged Warbler is a handsome little bird, about five inches long; color, bluish-gray above, with top of the head and broad bars on the wings a rich yellow. A broad streak of black runs from the bill behind the eye and covers the chin, throat, and fore part of the breast. The under parts are generally white. This bird is rare. It has been observed from Georgia to Massachusetts, and from New Jersey to Wisconsin. Its large nests are made on the ground, or in clumps of bushes, in woodlands close to the margins of swamps. The eggs, four or five in number, are clear white, with reddish spots, and very beautiful. The Golden-Winged Warbler reaches the latitude of Boston in May, and remains until September, when it returns South for the winter. Its song consists of



THREE SPRING BIRDS: THE FOX SPARROW, ACADIAN OWL, AND GOLDEN-WINGED WARBLER.—*Engraved for the American Agriculturist.*



THE "RED" BERKSHIRE SOW "BELLE."—*Engraved for the American Agriculturist.*—(*See next page.*)

only four or five syllables, which are peculiar and not very pleasing.

"Red" Berkshire Swine.

There has been some inquiry about the "Red" Berkshire swine. They are undoubtedly an off-shoot from the old Berkshire breed imported into this country early in the present century. Black Berkshire hogs at the present time are often "plum" colored, showing an inclination to red, while the "Red" Berkshires often have black hairs mingled with the red, and sometimes black spots. The common origin indicated by these markings is sustained by the statements of Loudon's Encyclopædia of Agriculture (1825), which says:—"The Berkshire breed is distinguished by being in general of a tawny, white, or reddish color, spotted with black; large ears hanging over the eyes, etc."

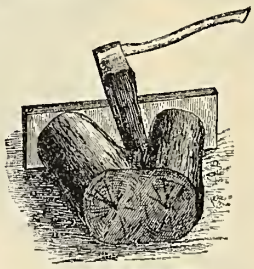
The "Red" Berkshires vary a little in the size of the ears, the length of snout, and in the shadings of their color. The true type requires a long body and deep sides, holding the width well out to the hams. The legs should be medium in length, well set under the body, and well apart; the head small as compared with the body; cheek broad and full; neck short and thick; ears rather large and lopping over the eyes; face, when aged, slightly curved, with the nose rather longer than some breeds; medium and strong boned; hams broad and full, reaching well down to the shanks; tail hairy and strongly set; a good coat of hair, medium in fineness, inclining to bristles on the top of the shoulders, usually straight, but sometimes a little wavy; color glossy red, varying from dark to light yellowish red, occasionally brownish hairs, and small flecks of black on the belly and legs. The darker reds are preferred. In disposition the "Red" Berkshires are mild, gentle, quiet, and easily confined by low fences. They are very prolific, and yield a large flow of milk. The offspring are large and strong at birth. The young pigs will bear heavy feeding and rarely get cloyed in their appetites. They possess the old Berkshire characteristic of marbled flesh—lean mixed with the fat. It is common for pigs eight to nine months old to dress from 300 to 350 lbs., and old hogs often weigh from 600 to 800 lbs. On account of the greater proportion of lean meat, and the extreme length of body and depth of the sides, they are peculiarly bacon hogs. The hams are also fine and of large size. These hogs never blister or get scurvy in summer or winter, and are not liable to have mange or other skin diseases. They are valuable to cross upon the delicate and fine-boned breeds, imparting to the offspring stamina and rapidity of growth.

The engraving on the preceding page of the breeding sow, "Belle," owned by Col. F. D. Curtis, is from a photograph taken soon after weaning a litter of nine pigs. "Belle" measures five feet and one inch from the end of her nose to the base of her tail. She is two feet and eight inches high from the loins to the ground, and has a depth of side of two feet. Her color is bright red. She had two litters of pigs the last season, and has never been fed to force her growth.

Shading Plants.—Newly transplanted plants often have a hard struggle under our hot sun. If they can have a little help until they "get hold of the soil," success is more certain, whether with vegetables or flowers. Whatever will shield the newly-set plant from the direct sun will answer; even a piece of paper will be of service. Shingles are exceedingly handy in the garden. One may be pushed into the ground to afford shade, or better, two may be placed over the plant like a roof. In the lack of anything else at hand, we have stuck up a blunt stake, put a newspaper over it tent-wise, placing earth on its edges to hold the paper in place. Of course it is better to transplant in a cloudy time, but sometimes one cannot wait, and a little shade for a day or two will secure success.

A Holder for Splitting Wood.

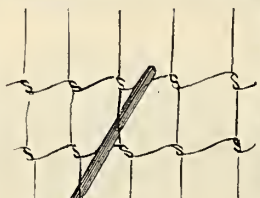
Mr. A. R. Dixon, Lake Co., Ohio, has a simple and effective holder for use in splitting wood, which is shown in the accompanying engraving. A crotch is cut from a tree a foot in diameter, and a piece of heavy plank is nailed upon the two ends by large spikes, thus making an enclosed space in which the wood is placed while being split. Mr. D. writes that when a lad he split a great toe with an axe, and hopes this device, which has been of so much good service to him, will prevent others from suffering a like injury.



A WOOD HOLDER.

Tightening Sieves.

Mr. W. Strock, Bucks Co., Pa., sends us a simple, quick, and effective method of remedying grain sieves that have become sagged from use. He writes:—"Take a round piece of iron or wood—or a lead pencil will do—and bend the wires as shown in the sketch (see engraving), going over every fifth row of meshes, both up and down and across. If all of a row is bent the same way, the meshes will not be enlarged.



A SIEVE TIGHTENER.

How are New Varieties of Potatoes Produced?

The above question is asked by "D. W.," Lee Co., Iowa, who follows it with:—"Can you give the manner of fertilizing, the time to fertilize, and the time to plant the seed balls?" Many of the well-known varieties of potatoes have not been "produced" at all; that is not by any direct agency of the cultivator. We must in the first place state that the potato is not a *root*, but a short, thick under-ground branch of the plant. We have several times seen, and no doubt many of our readers have also, the branches of the potato vine developed as potatoes above ground. We must start with the idea, then, that the potato is really a branch or stem. It is a well-established fact among fruit growers and florists, that a shoot or branch of a plant may produce very different fruits or flowers from the rest of the plant, and this occurs without any assignable cause, and without any human agency. These cases, by horticulturists called "sports," are very numerous. A late peach has been known to produce a branch on which all the fruit was early. Other peach trees have formed branches which bore only nectarines—merely a sport of the peach. Certain branches on yellow plum trees have produced red plums, and shoots on purple grape-vines have borne white grapes. In flowers, especially roses, these variations are very numerous. We only cite these cases to show what may take place, indeed, has taken place, in the potato. The tuber being really a branch, it may, like a branch of peach, plum, or grape, vary. A notable example of this is the "Late Rose." In a field of "Early Rose," a single plant was found to be green, and still growing long after the vines in the rest of the field were dead and ready for the harvest. The owner had the good sense to save and perpetuate the product of this vine, and now, as the "Late Rose," it is one of our valuable kinds. Other varieties have been produced in a similar manner. We can not cause this variation to take place, but as it may occur anywhere, the careful cultivator should take note of any marked differences in the vines that may appear in his potato field.

As to raising new varieties from seed, we doubt if much actual cross-fertilization has ever been done. To refer to fruits again—the seeds of the apples or the peaches from any one tree, taken as they are, without any attempt at fertilization, will give a great variety of seedlings, and we know it to be the same with potatoes. That greatest of all modern potatoes—greatest in itself and in the varieties it has given rise to—the "Early Rose," came from a chance seed ball, of the coarse, but prolific "Garnet Chili." A grower had picked this seed-ball from his patch without selection, and pinned it against his window to ripen, and finally gave it to Mr. Breese—of blessed potato memory—who sowed the seeds. From the seeds in this chance ball, picked without any selection, came "Early Rose," "Breese's Prolific," and several others, all of excellent quality, but all very different, some being white, others red; some long, others round, some early and some late; indeed from that one, and now famous seed-ball, were raised potatoes differing among themselves as much as potatoes can differ. In view of the results from this single seed-ball, we doubt many of the stories of direct crossing. Still, if one wishes to experiment in this, the flower of the potato affords an easy subject, as the anthers do not shed their pollen early, and if removed as soon as the flower opens, the pollen from another flower can be readily applied to the pistil. As to raising potatoes from the seed, the balls are kept until the time for sowing, when the seeds are removed and treated precisely as tomato seeds. They are started in boxes in the greenhouse, the hot-bed, or in the kitchen window (Mr. Breese followed the last named method), and the plants treated exactly like tomato plants, save that they may be set in the open ground somewhat earlier. Mr. Breese informed us that the original plant of "Early Rose" gave him several good sized tubers the first year, and stated that in his experience, if a seedling potato did not do this the first season, it was not worth while to continue to grow it.

A Medium Bank Barn.

Mr. J. Binns, Jefferson Co., Ohio, erected a barn last year, of which plans are here given. It is on a side-hill, is 65 feet long, 36 feet wide, and 18 feet high from sill to plate in front. The elevation of the front is shown in figure 1; the ground being made of easy grade up to the doors. Figure 2 shows the rear elevation, and figure 3 the plan of the basement, which is 8½ feet high, and contains horse

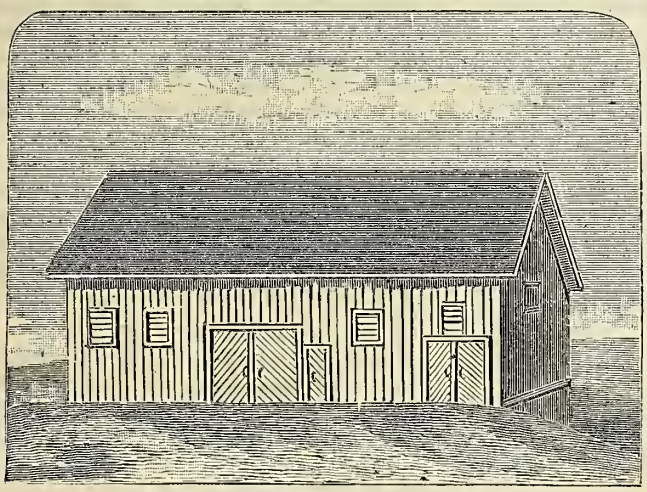


Fig. 1.—FRONT ELEVATION OF BARN.

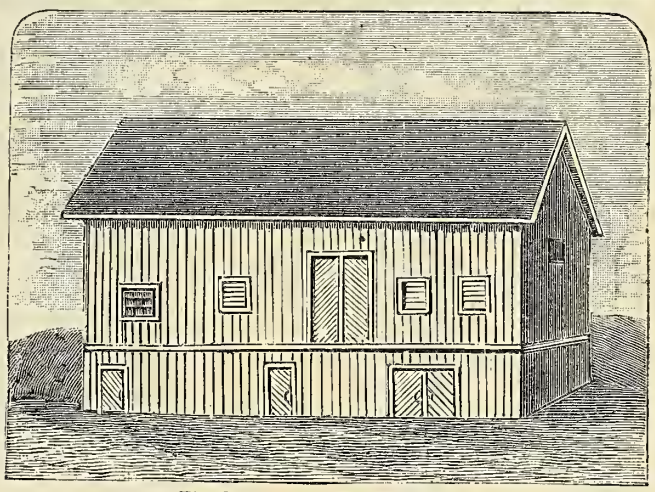


Fig. 2.—REAR ELEVATION OF BARN.

stalls, feeding passage, cattle and sheep pens, etc. The basement wall is of stone two feet thick except 24 feet on the front opposite the threshing floor, where it is three feet in thickness. The rear side is weather-boarded. Figure 4 shows the plan of the main floor; *a*, threshing floor, 20 feet wide; *b*, entry to implement room; *c*, wool room; *d*, granaries, of tongued-and-grooved boards, with doors opening from threshing floor. A stairway leads to the basement; *f*, hay or grain mow, 20 feet wide; *g*, implement room; *h*, work bench; *i*, hay shute.

ESTIMATED COST OF BARN.

Mason work, quarrying stone and digging cellar,	$250 00
Cost of lumber for frame, flooring, etc.	286 60
Bill of pine boards planed for siding granaries, etc.	197 46
13,000 oak shingles	100 00
Carpenter work	340 00
Expenses raising frame	15 00
Nails, hinges, locks, etc	40 00
Copper lightning rods	73 33
Tin spouting	13 50
Hay Carrier, rope, and putting up in barn	23 11
Paints and painting	46 00
Stone for foundation	15 00
Hauling logs and lumber with our own teams	95 00
Total	$1,500 00

Mr. B. writes us:—Many of the items are taken from the actual bills. But others I had to estimate. I engaged a portable steam saw

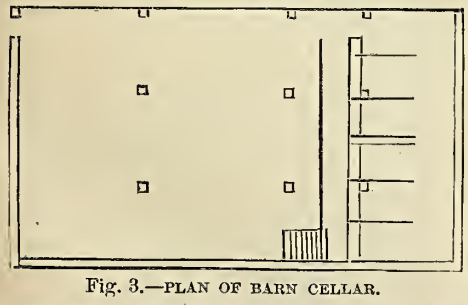


Fig. 3.—PLAN OF BARN CELLAR.

mill, which was set on a spring branch at the edge of the woods from which we had the timber cut. As the hard-wood timber was cut from timber growing on the farm, and most of the hauling was done with our own teams, the whole cost of the barn was not cash outlay, but I have estimated the timber and hauling at a moderate valuation. The stone for the foundation was quarried on the farm and hauled by the masons to where it was used as part of their contract.

Breeding Turkies for Profit.

D. Z. EVANS, JR.

The turkey crop is an uncertain one. Late, wet spring months, followed by a noticeable absence of grasshoppers and other insects, result in a small number of turkies and consequent high prices. Dampness is fatal to young turkies, especially those in the "downy" state. Young turkies are hardy after they have become fully feathered and are half grown; they can then stand almost anything but foxes and chicken thieves.

Early in spring the turkey hens seek a secluded place for nests. They should then be watched, but not disturbed, and when they have laid a fair clutch, say nine to eleven eggs, these should be gathered carefully and at once taken to the barn or hen house, and there set under a common hen. Taking the eggs from the turkey hen will cause her, usually, to hunt new quarters, and she should be permitted to hatch her second clutch of eggs. It is later in the season, and she will not endanger her young brood when strolling. By this means, two settings or broods can be secured from each turkey hen. The first brood being hatched in early spring, when the weather is more inclement, requires extra attention, and this is accorded more readily when under the care of a common hen.

Care of the Young Birds.

The young birds should be left under the hen for one day after they are hatched, to gain strength and become dry. They need no food during this time, and should be left undisturbed. Freedom from wet or dampness is absolutely essential to success in breeding turkies. Make a commodious coop for them, with a stout board bottom, the top being rain-proof. The coop should be slatted in front, that the young birds may run in and out. Arrange a board to close up the entrance during the night and when wet outside. A couple of common boards, a foot or eighteen inches wide, placed edgewise, make a > shaped yard or run before the coop. Feed five times daily, but no more should be given than the birds will eat up clean. Clean the coop every day or two, after which it should be sprinkled with fresh, clean and dry sand.

All young poultry, and especially turkies, are better without any water for the first two or three weeks; they get all the water or liquid needed at this age from their moist (though not wet) food. Too much water causes colds, diarrhœa, and their attendant evils.

Food.—This is a point on which breeders differ, but the system I have adopted invariably gives us good results. I commence feeding with either "Cottage Cheese" (Smear-Kase), mixed with finely chopped onion tops, lettuce, or parsley, seasoned with a trifle of Cayenne pepper; or else stale bread moistened with sweet milk is used. The bread is soaked in the milk and squeezed as dry as possible with the hand before feeding it. This is excellent feed, and is my main dependence for all kinds of young fowls. Corn meal should not be fed to young turkies. When two weeks old give them a run with the hen outside the yard, during the middle of the day; they should never be permitted to run out while there is dew on the grass.

Green Manuring.—A soil run down by long cropping, can be brought back to fertility by green manuring. At first it may be even difficult to get a good growth of any plant, without the use of some commercial fertilizer. Peruvian guano is excellent to give this start, after which the plowed-under crop will aid the next one, and so on until the soil becomes well-filled with plant food. Buckwheat is a close feeder, and is a good first crop; clover may follow, and, when a fair growth of this is obtained, the soil will bear other crops. After land has been brought up to reasonable fertility by green manuring, it should be kept there by the addition of manure from the barn-yard, or by the use of

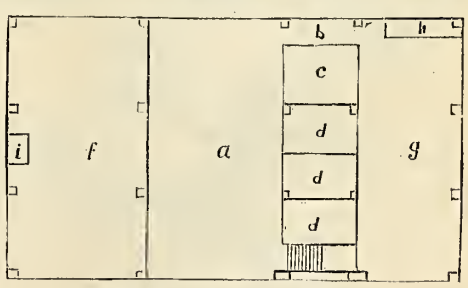


Fig. 4.—PLAN OF MAIN FLOOR.

commercial fertilizers.—It is poor farming that runs down the soil; but if it is already down, it is wise to bring it up in the cheapest and quickest way possible. Manuring with crops that are close and deep feeders, like those above mentioned, will aid in this, and any manure that may be used with these, only hastens the work of restoration.

A British Columbia Beef Raiser.

Mr. "M. L.," of Spallumchean, B. C., writes us:—"I enclose a sketch of a British Columbia way of elevating beeves, in dressing. Two posts are set about 15 feet high. A deep mortice is cut in the top of each to receive the roller, which is grooved at the points of turning. One end of the roller extends beyond the post, and through this end three two-inch holes are bored. Three light poles are put through these holes, and their ends

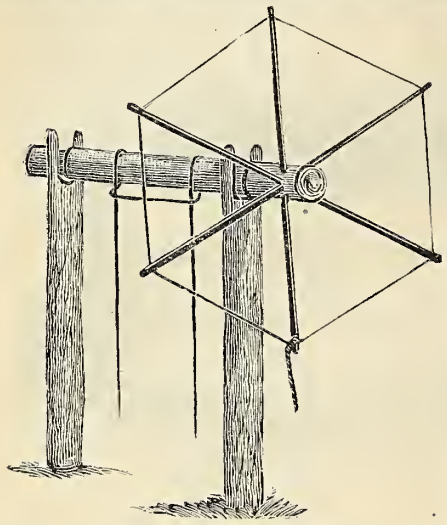


Fig. 1.—A BEEF RAISER.

connected by a light rope. In raising the beef the middle of a stout rope is thrown over the roller; the ends are drawn through the loop, and after the beef is fastened to the loose ends the roller is turned *against* the loop by means of the "sweep," or lever arms. A heavy beef can be easily raised, and may be fastened at any hight desired, by tying the end of one of the levers to the post with a short rope."....—The same writer sends us

"A HINT FOR PIG KILLING.—We lay a log chain across the scalding trough, and put the pig upon it. Cross the chain over the animal,

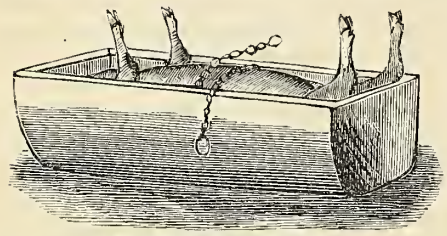


Fig. 2.—SCALDING A PIG.

and a man at each end of the chain can easily turn the pig in the scald, or work it to and fro as desired."

The Use of Lime.—A fertile soil contains considerable organic matter, which in decomposing yields food for the growing plants. If this decomposition is so slow that an insufficient amount of food is rendered fit for the crop, lime will often hasten decay and add to the available stock of fertility in the soil. It is seldom needed directly as food, because very few soils are devoid of considerable lime, but its decomposing power changes other soil ingredients to a form in which they can enter the roots of the plants. Lime may thus be considered a stimulant, and unless there is organic matter in the soil for it to act upon, there is seldom any use of applying it. It may even exhaust a soil too rapidly of its organic matter. Lime should be applied soon after burning, while still caustic, and intimately mixed with the soil. Ground, unburned lime-stone is of little value, except perhaps on some few soils that chance to be without any lime, and such soils are rare.

Judging Milk by Test or Taste.

Few milk producers know the ordeal to which their milk is subjected when a good judge examines the can. If milk is scarce, buyers are easily satisfied, but when abundant in spring and early summer, they become critical. As the weather grows warmer, milk does not keep so well. Stables are filthier, the dung heaps higher, and reeking with foul odors; the cows are shedding their coats, and their flanks are gradually becoming denuded of the "scale armor" which has been accumulating all winter. All these are causes, direct or indirect, of "cowey" odor in the milk, dirt in the bottom of the can, poor flavor of the milk and cream, and the butter or cheese, and poor keeping quality. The receiver of milk at a factory, or creamery, if he knows his business, will be just as particular about receiving milk in good order, as is the city milk dealer about that he accepts from the farmer, to be paid for at the end of the fortnight. In fact, the fore-handed city milk dealer generally manages to be quite independent of his milk producers. As soon as milk is plenty he will be in receipt of a few cans more than he absolutely needs, so he can cull out a few, which he condemns to be sold for what they will bring, or if there is no sale, he ships them back to the farmer upon whom the loss falls. It is rare that the farmer, fresh from the cow stable, his boots, clothes, whiskers, and hands smelling as "cowey" as stable litter, can perceive anything wrong in the milk, while the full knowledge that he has shipped a great deal worse milk than that all winter, and at the same time been much more liberal in dousing in pail-rinsings than he is now-a-days, makes him feel as if he were unjustly dealt with, which is far from true. This leads us to the point of telling how milk is judged.

1st—"Scientific" Judgment.

A young doctor has the top taken from a can—it is a question if he could do it himself without a mallet. He feebly stirs the milk, notes the temperature, takes a sample of milk and fills a glass in which he puts his lactometer, and notes the point at which the lactometer floats, and corrects the reading by the temperature, and arrives approximately at the specific gravity, or the density, of the milk. The result is absolutely valueless, for by the removal of a portion of cream and the addition of a portion of water the density of any milk will remain unaltered. If fraud is suspected by this test, by the color of the milk or its adhesion to the sides of the glass, a sample of milk is retained and an analysis made which may have some value. About thus is milk tested by the Inspectors of the Board of Health. It follows as a matter of course that much poor milk has been passed, and in all probability some good milk has been condemned.

2d—Practical Judgment.

The milk dealer, when he examines a can of milk, gives it a whirl off to one side, and before he loosens the top, gives the milk a thorough stirring up by rocking the can a few times; then he *jerks* the top off, and immediately—stooping over to be close to the can, snuffs his lungs full of air out of the deep flanged cover. Then he takes good note of how the milk flows down from the inner sides of the top. He may smell also at the mouth of the can, but the whiff he gets in the can-top is most reliable. A gill of milk collects in the cover—this he tastes—and between smell and taste and looks, passes judgment on the spot.

He can taste *water*, even though the milk, watered as it may be, contain over 12 per cent of cream. He will detect a "cowey" odor, the odor of rag weed or garlic; the stale taste and odor of badly cooled milk; the first incipient lack of sweetness or beginning of souring, and will tell to a nicety how many hours that milk will keep "sweet enough to scald." And besides, he will take a pint dipper and thrust it into a can in such a way that the specks and dirt present at the bottom will come welling up to the top, showing themselves like a school of fish, and then sink to rest on the bottom again.

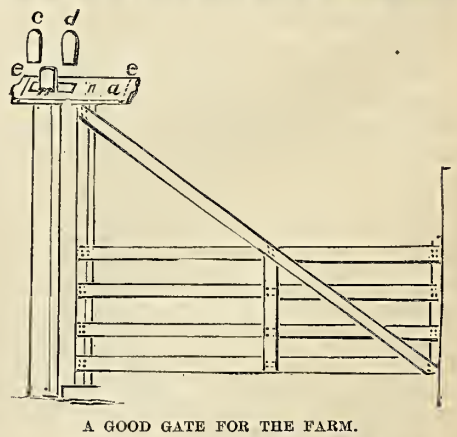
3d—The Cream Test.

At the factory or creamery, the milk of each farmer is strained and weighed. The straining shows the dirt. Then, every day, a sample test-tube of milk should be set for cream to rise, and thus every "patron" be served alike. A record ought to be kept of the cream percentage, which shows after twelve hours. A convenient plan is to have one or more pails filled with water and broken ice, and covered with a board, bored full of holes just large enough to hold a ten-inch test-tube. The tubes as fast as they are filled are set into the ice water, and the cream rises very rapidly.

Thus with a little care and good judgment a close watch is kept over all the milk received, and the article will tell its own truthful story of poor feed, of dirt, of fraud, or of honest folks, and good farmers and feeders.

A Good Farm Gate.

Mr. N. Y. Abbott, Columbia Co., Wis., has some time past used the gate shown in the engraving, with much satisfaction. The hinge-post is about twice the hight of the gate, and has a cap-piece, *a*, near the top. This cap is of 2 by 6 hard-wood, strengthened

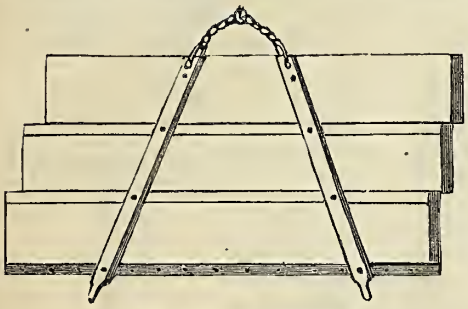


A GOOD GATE FOR THE FARM.

by two bolts, *e*, *e*, and held in place by two wooden pins, driven just above it and through the tenon end of the post. Wedges *c* and *d* are driven in the cap on each side of the post. Should the gate sag, the wedge, *d*, may be loosened, and *c* driven further down. The lower end of the gate turns in a hole bored in a hard-wood block placed in the ground near the foot of the post.

A Home-made Clod Crusher.

Mr. Geo. R. Perkins, Madison Co., N. Y., writes us :—"Inclosed you will find a drawing of a very valuable farm implement which will interest the readers of the *American Agriculturist*. It will pay for itself in one day, if a farmer has no roller. I like it for smoothing after sowing ground to grass seed, wheat, oats, and other grains." It is made as follows :—Provide three 2-inch hard-wood planks, one foot wide and ten feet long. Lap the edges two inches, and securely fasten them. Two hard-wood scantling are cut to



A PLANK CLOD CRUSHER.

fit the upper surface of the united planks, and fastened by bolts as shown in the engraving; they project 4 inches behind for handles. The whiffletrees are fastened by a short chain to the front ends of the cross-bars. A 2-inch strip of hard-wood is nailed on the rear edge of the crusher, to hold any stones, etc., that may be put on the rear plank, for increasing its weight, as may sometimes be necessary in addition to add more than the driver's weight. On hard or lumpy land the crusher may be run bottom side up, when the rough edges will cut and break the clods. Mr. P. names the cost of this valuable farm implement at a low figure ($1.35).

Some Experiments with Durra.

BY I. H. MAYER, M. D., LANCASTER CO. PA.

On May 21st, 1881, one fourth of an acre (1) was planted with white and brown Durra. The soil was sandy, rather poor, with an under stratum of sandy clay, from two to six feet deep. The soil in this field produced 40 bushels corn per acre, by the side of the Durra. (2) Several days later some was planted in extremely poor sandy soil. At the same time a quantity (3) was planted in sandy loam, with a sandy subsoil, and on May 26th, a few hills were planted (4) in a rich clayey loam. The results in the four lots were nearly similar to a like experiment with Indian Corn. In lot No. 2 the growth was very short, scarcely three feet high, with an abundance of leaves and very small seed heads. In this lot the yield of grain was about the same as Indian corn, and the fodder yield was a trifle greater. In 1, 3, and 4, the yield of grain and fodder was not equal to the corn yield. In No. 4, the yield of grain was less than half that of corn. In lots 1 and 4, a number of the best heads were selected before fully ripe, and found to yield one quart of clean seed from three heads. Planted 3 by 4 feet, four plants to the hill, or the seed dropped in the row at the same rate, would show over 14,000 plants per acre. Basing the calculation upon three heads to the quart, or about 100 heads to the bushel, would give 140 bushels per acre, though the actual yield in either of the lots certainly did not reach forty bushels per acre. These experiments would indicate that even in the poorest soil in Lancaster County, at least, the crop is not preferable to corn. It will be remembered, too, that 1881 was very dry and unfavorable for corn.

In growth, Durra closely resembles Sorghum, or Broom Corn. The seed should be covered lightly—half an inch, or an inch—or it will be a very long time coming up, perhaps rotting in the soil. When it first makes its appearance above ground, it grows like Broom Corn, feeble, marked with red spots, and easily choked by weeks. After it produces six or eight leaves, the growth is very rapid, and the leaves then produced are of a dark green color, the stem and leaf being more or less covered with a white bloom. The upper part of the stem of a well-grown stalk makes a short curve, allowing the head to hang down, giving the plant a peculiar appearance, even before it is in bloom. [This shows that our correspondent experimented with the drooping varieties of Durra.—EDS.] The heads are shaped somewhat like Sorghum heads, though shorter and thicker. In consequence of the compact form of the heads, some of the seed in the largest spoiled from the effects of a few showers during the dry season. From this it appears that in a wet season the crop would prove a partial failure. The fodder, both green and dry, leaves, and entire stem, are eaten by cows and horses, the former preferring it dry to good corn fodder or hay. Green corn stalks from sweet corn appeared to be relished equally well. There were no marked effects produced by its use, either green or dry.

Barn-yard fowls are fond of the grain, and appear to thrive upon it. One month's trial, however, proved it to be quite inferior to wheat or buckwheat, and not much better than corn for the purpose of keeping fowls in the highest possible healthy condition. The various wild birds appear to be fond of it also. More than half the crop was harvested by the English sparrows. It seemed as if the large flock in the vicinity had invited all their relatives to the feast.

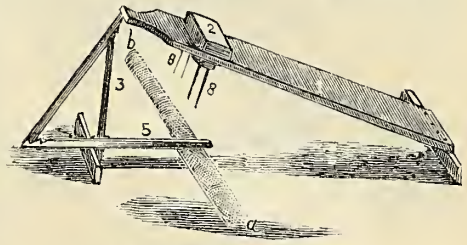
The seed, cooked before fully ripe, like green corn, is said to have the flavor of chestnuts. The six who tried it failed to find even a trace of chestnut flavor. There appeared to be some resemblance to boiled wheat, though I would much rather have the wheat.

The seed is rather difficult to cure. Being very much exposed on the heads, the greater part is readily secured by the birds; besides, the weather would usually bleach and otherwise injure the external seeds, while the center of the heads in a wet season would readily rot, or mould, as it did even this dry season. The small heads produced upon extremely poor soil, would not suffer from the last-named drawback. When dry, the grain drops very readily from the head, and this applies alike to large or small heads. The heavy heads, with their short, curved stems, make it quite troublesome to shock, and liable to be blown over when shocked, thus dropping much seed. The *white* is a beautiful grain, almost as large as white popcorn. The *brown* is scarcely superior to Dwarf or other good Broom Corn seed, which it closely resembles, and is fully as difficult to cure properly. The brown is the taller variety, while the fodder appeared to be the same in quality.

As food for man or beast, these experiments failed to produce any results, as the birds, already noted, secured fully half the seed, and the fowls were allowed nearly all that remained, mostly from the heads, before it was dry enough to grind.

A New Mole Trap.

Mr. J. C. Coons, Montgomery Co., Ky., has caught fifteen moles during one month with a trap of which he writes us as follows :—"The piece (1), is an inch board four feet long and eight inches wide; (2) is a twelve-pound weight. The "figure four" has the "trigger" (3) one foot long, and the other parts in good

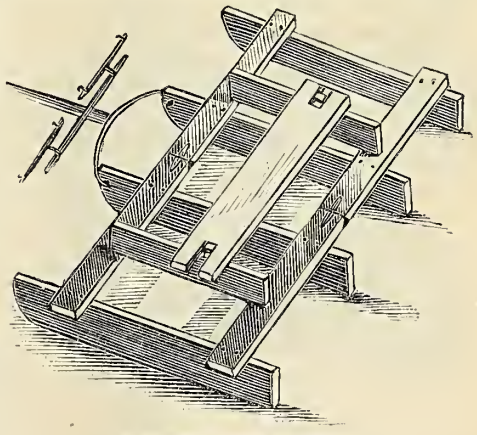


A EFFECTIVE MOLE TRAP.

proportions. The four barbs (8, 8,) are sharpened iron spikes eight inches long, fastened in a small block; the two pairs are about six inches apart. The trap is placed so that the falling spikes will strike into the mole "road." Press the raised earth down at one place, and bring the long end of the treadle of the "figure four" directly upon this point. The mole, in passing along his "road," will raise the earth and spring the trap, letting the spikes descend. It is well to press the "road" down at some point, *a*, *b*, on each side of the trap that has been sprung, as the spikes may not have killed the mole, and it might otherwise run off when the "dead-fall" is raised.

Another Corn Marker.

Mr. J. B. Pratt, Swain Co., Ohio, sends us the following description of a corn marker :—"Make the four runners of 2 by 6-inch plank, and 3 feet long; pin a board across the top at each end, and afterwards saw it in two in the middle and put on hinges. Fasten a 2 by 6-inch piece across the boards half way be-



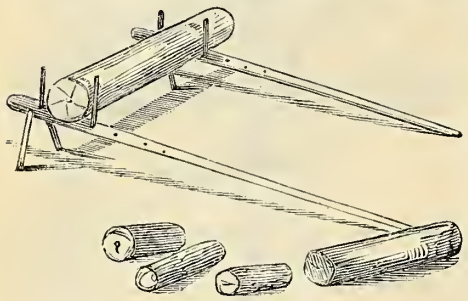
A HINGED CORN MARKER.

tween the runners, and place a board across the top with a slot in each end to set over a pin in the cross pieces. This makes a good place upon which to stand, and keeps every runner on the ground, over ridges as well as on level ground. I use a common buggy pole, and drive to a stake instead of by the last mark."—[The length of the two main cross-boards is not given. This will, of course,

depend upon the width desired between the rows, which may vary from 2½ to 4 feet, according to the soil, variety of corn, and whether for a grain crop, or for fodder. Some one may improve upon this by a simple method of fastening the runners so they may be changed in place to make the row marks of any desired distance apart.—ED.]

A Holder for Logs.

Mr. D. D. Day, Orleans Co., N. Y., finds a holder for logs so convenient that he sends us a sketch and description of it for the *American Agriculturist's* readers:—"Take two round poles, 4 or 5 inches through, and fasten two legs, about 20 inches long, in the largest



A HANDY LOG HOLDER.

end of each. The other ends of the poles rest on the ground. A number of holes are bored in the top of each pole, so that the log to be sawed may be raised and held at any desired hight. One man can readily roll up a log two feet in diameter."—The greater ease of running a cross-cut saw through a log thus raised is sufficient inducement to construct a simple holder like the one shown in the engraving from Mr. Day's sketch.

Some Facts About Cutting Hay.—I.

BY W. H. JORDAN, PROFESSOR OF AGRICULTURE, PENN. AGRICULTURAL COLLEGE.

"When is the best time for cutting grass?" has been asked again and again. Replies have been given now and then, as new facts have come to light, but, after all, has the question been answered?

It might possibly puzzle the thoughtful farmer, who has followed the discussions of the past year or two, to decide what is the verdict of scientific investigation on the one hand, or of practical farmers on the other. The opinion most generally held is that grass is most profitably cut while in bloom. Yet no one seems to have sufficient confidence in this opinion to consider further investigation useless. The final appeal must be to the actual feeding; such trials are so difficult to make reliable, the sources of error being so many, that we have to form a partial opinion from information obtained in other ways.

More investigation in this direction has been done in Germany than anywhere else. Some valuable work has been done in this country, however, within the past few years, though not yet sufficiently extensive to found very broad conclusions. In part of what follows, an attempt has been made to summarize the results of American experiments.

In discussing the time of cutting grass one needs to consider:—1st, Quantity; 2d, Composition; 3d, Nutritive relations and effects. The effect of the age of grass upon the quantity of production is determined by cutting equal plots of uniform grass at different periods of growth and accurately weighing the hay. Samples of the same have been analyzed in some cases. The plots in the experiments here mentioned have varied in size from one-twentieth of an acre to a full acre, their shape usually being long and narrow. The main source of error in such a method is the impossibility to select plots of grass that are absolutely uniform.

The following are the results of several experiments made in this country, and include four periods of growth, the figures being pounds of dry substance per acre. Experiments Nos. 1 to 7 were made at the Maine State College Farm—No. 1 by Prof. W. O. Atwater; Nos. 2 and 3 by Prof. J. R. Farrington; and Nos. 4 to 7 by the writer of this. Experiments Nos. 8 to 10 were conducted by Prof. J. W. Sanborn, of the N. H. Agricultural College, and No. 11 by W. R. Shelmire, on the Eastern Experimental Farm of the Pennsylvania State College. In Nos. 1, 4, and 5, the dry substance was determined by analysis. The figures for Nos. 2, 3, 6, and 7, have been calculated by allowing the weights of field cured hay to contain 20 per cent of water. In experiments 8, 9, 10, and 11, the hay was reweighed after having laid in the barn for several months, and one-eighth (12½ per cent) of these weights has been estimated as water. The figures must show quite close approximate to the actual yield of dry substance in the several cases.

TABLE 1.

	Year.	Cut when well headed out.	Cut when in blossom.	Cut when considerably past blossom.	Cut when ripe.
		Lbs. per acre.	Lbs. per acre.	Lbs. per acre.	Lbs. per acre.
1.....	1876	2,479	3,301	3,117	3,616
2.....	1878	2,976	3,040	3,312	....
3.....	1878	2,992	3,376	4,456	3,624
4.....	1779	2,536	3,456	2,784	....
5.....	1879	....	3,200	2,872	3,112
6.....	1880	3,620	3,540	3,080	3,800
7.....	1880	3,420	3,480	3,360	3,240
8.....	1879	....	2,415	3,096	....
9.....	1880	2,057	2,339	2,963	....
10.....	1880	....	2,034	2,562	...
11.....	1879	2,588	2,772	2,852	....
Average...		2,586	2,996	3,132	3,478

The above averages show a gradual increase of dry substance up to the time of ripening. As before stated, in some of the experiments samples of the hays were analyzed. This was done with Nos. 1, 4, 5, 8, and 9, and below is given their average composition at the different stages of growth.

TABLE 2.

	100 *parts Dry Substance contain*—				
	Ash.	*Protein.*	*Crude Fiber.*	*Other Carbohydrates.*	*Fat or Oil.*
Well headed out.	6.10	11.12	27.85	51.52	3.45
In bloom.....	5.04	7.75	30.33	53.72	3.17
Considerably past bloom.....	4 67	6 66	32.39	53.30	2.98
Ripe.....	4.27	6.16	36 26	51.21	2.08

This table shows that the relative amount of ash, protein, and fat, decreases as the grass grows older, that the percentage of crude fiber increases, while the remaining carbohydrates do not change very much in their relative quantity. The last table tells nothing, however, as to the change in the total amounts of the various ingredients. If we multiply the total quantity of dry substance produced in each case by the figures given for the percentage composition, we can then see what changes are caused in the total quantities of ingredients by the increased age of the grass. This is shown in the next table.

TABLE 3.

	Well headed out.	*In bloom.*	*Considerably past bloom.*	*Ripe.*
Total pounds ash.....	157.6	151.	145 3	148.5
Total albuminoids.....	287.6	232.2	208.6	214.2
Total crude fiber.....	720.2	906.4	1,024.5	1,261.
Total other carbohydrates	1,332.6	1,610.	1,669.	1,787.
Total fat	89.2	95.	93.4	72.3

Table 3 shows that the carbohydrates increased largely in total quantity, in passing from the first to the last stage of growth. This was especially true of the crude fiber. There is an apparent decrease in total quantity of the ash and albuminoids, which is remarkable.

Two Levelling Devices Used in Ditching.

Mr. Chester Town, Wyoming Co., N. Y., sends us sketches of levels used in ditching. Figure 1 shows a level which consists of a standard and a cross-piece made to swing at the top. To this is suspended a wire bearing a weight. Two pins are put in the cross-pieces near the ends to serve as "sights." To adjust the level, take a sight at some object; then turn the cross-piece one-half way round, and, if it "sights" the same object, it is adjusted.

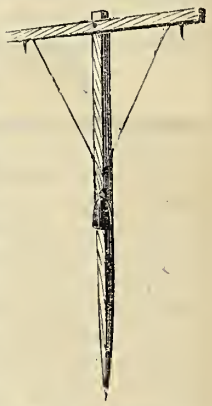


Fig. 1.—A SIMPLE LEVEL.

Figure 2 shows an instrument to widen and level the ditches in places where the plow has left it too narrow. Two pieces of 4 by 4 white oak scantling, 10 feet long, are used. The end of one pole is hewed off and joined to the other at such an angle that the opposite ends shall be as far apart as it is desired to have the ditch widened. Harrow

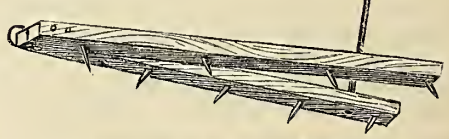


Fig. 2.—A DITCH WIDENER.

teeth are put in two sides of the scantling—slanting outwards, as shown in the engraving, to strike against the sides of the ditch.

Handling Horses.—Men differ greatly in the amount of work they can get out of a team of horses, and the animals know this as well as the drivers. Some will fret and sweat a team when only drawing an empty wagon, while others will drive the same horses before a heavy load and not wet a hair. This difference is more easily seen than described. Kindness in manner and in tone of voice go a great way towards making the load draw easily. The owner's handling of the reins is frequently far different from that of the hired man. We have seen teams kept poor in flesh by an almost incessant worry from an ill-fitting harness, an inhuman jerking upon the bits, or a frequent and injudicious use of the whip. Boys are not exempt from these strictures. Many teams have had their usefulness impaired by a disregard of the

feelings of the horses. It is not the well fed horse, only, that does the most work, and keeps in the best condition; he must also have a kind master, and be treated with a just regard for equine sensibility.

Handy Boxes for the Barn.

The next thing to a good basket about the barn is a properly made box, and for many purposes boxes are preferable. They are cheaper and will last a long time. Figure 1 represents a box holding about one bushel. Strips are nailed upon two sides near the top, and an oval piece cut out from the under side at the center for handles. Two triangular strips, *p*, *p*, are nailed over two upper corners for guiding the contents of the box when emptying them into a bag out of a smaller vessel. Instead of the triangular corner pieces, a thin board (figure 2, *h*), with an oval opening near the center, serves the same purpose. Boxes like this made from light, tough wood, will last a long time, and are a great convenience about the barn, corn crib, etc.

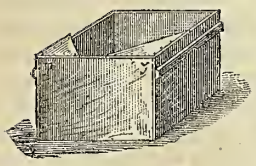


Fig. 1.—BARN BOX.

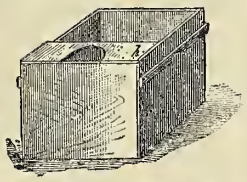


Fig. 2.—ANOTHER FORM.

L. D. S.

An Important Southern Product.

A Former Waste of $33,000,000, to be Utilized—Cotton Seed—What is being Done.

BY HON. J. S. NEWMAN, OF GEORGIA STATE AGRICULTURAL DEPARTMENT.

After numerous experiments and failures, extending back to 1834, the use of Cotton Seed for various purposes, is becoming an important industry. The seed is now purchased by the mills at 15 cents per bushel, or $10 per ton. The first process in their manipulation cleans them of trash, sand, motes, etc.; after this they are passed through a gin, made for the purpose, by which they are stripped of the lint, that was left on them by the plantation gin. An average of 22 lbs. of short lint, called "linters," is obtained from a ton of seed. This sells at from 6½c. to 7c. per lb., and is used in the manufacture of cotton batting. The seeds then go to the hullers, where they are decorticated, and the kernels separated from the hulls. The latter form about one-half of the seed by weight. They are used as fuel for the engines which furnish the power for the mills, and produce an ash which is very rich in potash, yielding, according to recent analysis, as high as 22 per cent of potash. The ashes sell at the mills at $12 per ton. The hulls from a ton of seed yield only 35 lbs. of ashes, which, owing to the complete combustion and the great draft of the furnaces, are very highly concentrated. The kernels, after being steamed, are put into hair-cloth sacks in which they go to the boxes of the hydraulic press, where the oil is extracted, yielding 35 gallons or 262½ lbs. of crude oil per ton (average). This oil sells at the mills at 35c. per gallon. In the process of refining it loses 18 per cent by weight and sells when refined at 55c. to 60c. per gallon.

A ton of seed yields from 700 to 750 lbs. of oil cake, which sells at the mills at $20 per ton. When exported it is generally shipped as cake, but for home consumption is first ground and sold as meal. The present annual consumption of cotton seed by oil mills is only 350,000 tons, or an average of a little more than 6,000 tons per annum to the mill. There are 57 mills, distributed as follows:—Tennessee 10, Miss. 9, Louisiana 9, Texas 9, Ark. 8, Ala. 6, Ga. 2, Mo. 2, S. C. 1, and Ills. 1. There will be many more all over the South ready for the next crop of seed.

The demand for the products of the mills is rapidly increasing and widening in its scope. When thoroughly refined, cotton seed oil is not easily distinguished from the finest olive oil, and I venture the assertion that nine-tenths of the "Olive" Oil sold in the United States is made from cotton seed. At first it was sent to the continent of Europe to be refined, labelled, and returned or distributed to the trade of the world. The voyage across the Atlantic is no longer necessary for its conversion into the finest "Olive" Oil.

The cake finds a ready sale both in this country and Europe as food for live stock. It is being largely used also as a source of Ammonia in commercial fertilizers, and affords the best source available, having from 7 to 8 per cent of Ammonia, besides from 1½ to 2 per cent of Potash, and from 2½ to 3 per cent of Phosphoric Acid. In 1880, according to the statistical report of the U. S. Treasury Department, 6,997,796 gallons of cotton seed oil were exported from the United States. The same year 453,023,225 lbs. of oil cake and 12,142,137 lbs. of cotton seed were exported.

The home demand, however, is so rapidly increasing that it is probable that when the great value of these products is more fully appreciated there will be little surplus for export. The partially refined oil, having a portion of its stearine and margarine retained, is very rapidly supplanting lard in its uses for culinary purposes. Six months ago, with rare exceptions, it was not offered for sale by the family grocers of Atlanta; now nearly all of them not only keep it but find a ready sale for it to their customers generally. After using it for three months, I am convinced that it is destined to expel lard from the tables of the people of the South, and to be used to a large extent elsewhere. It can be used in the preparation of any dish for which lard has been hitherto used, and for some purposes such as frying fish, chicken, etc., is far superior to lard.

The Oil Worthless as a Fertilizer.

The oil is not only entirely valuless as a fertilizer, but is deleterious to the seed, when used for that purpose, by delaying decomposition and hence retarding their availability to the plant. The cotton seed oil-cake meal is in better form for use by the farmer than the whole seed, whether he feeds it to stock, manipulates it with stable manure, or superphosphate, or both, or applies it directly to the soil as a fertilizer. By the manufacture of oil, therefore, that which is entirely wasted when the whole seeds are used as manure, becomes more valuable than the whole seed; while the waste products from the manufacture of the oil are also more valuable than whole seed, no matter in what form used.

Value of the Cotton Seed Crop of the U. S.

The Superintendent of the Census reports the average weight of the bales of the cotton crop of 1879 at 475 lbs. each. As there are two lbs. of seed for every pound of lint, a crop of 6,000,000 bales of cotton implies the production of 950 lbs. of seed per bale—5,700,000,000 lbs., or 190,000,000 bushels, or, as we generally estimate it, 2,850,000 *tons*. According to the last census there were 14,462,431 acres planted in cotton in 1879. Allowing 2 bushels per acre for planting and waste, 432,872 tons would be used for this purpose. Deducting this from the whole crop—2,850,000—leaves 2,417,128 tons to be used as stock food or manure. These, if used by the mills, will yield the various products in quantities and values as follows:—

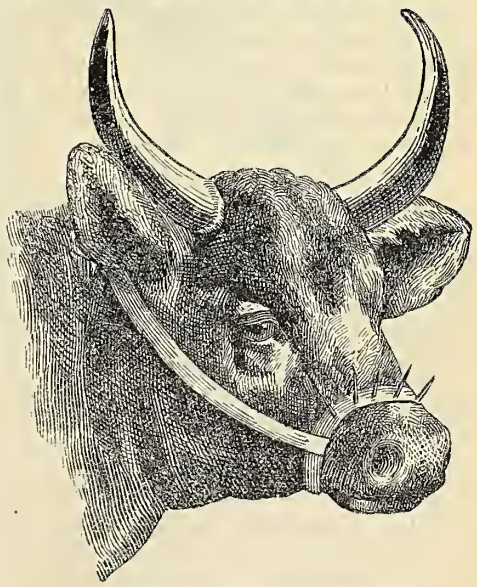
84,599,480 gallons crude oil @ 35c.	$29,609,818
906,423 tons of cake @ $20.00	18,128,460
53,176,816 lbs. linters @ 7c.	3,722,377
42,299 tons ashes @ $12.	507,588
Aggregate value of products	$51,968,243
Deduct cost of 2,417,128 tons of seed @ $10.00 per ton.	$24,171,280
Excess of value of products over cost of seed	$27,796,963

The reader will observe that the value of the crude oil alone exceeds the cost of the seed at present prices, by $1,812,855, and that the gross profits of the mills, after paying for the seed is $27,796,963.

It is evident that the planter is not receiving his share of the profits of the crop. Instead of $10 per ton, the mills can afford to pay $15, and still have a large margin for profit.—At $15 per ton the crop of seed would bring $36,256,920, which would still leave a margin of $15,711,323 for the mills. While the planter could afford, rather than use the whole seed as manure, to exchange the seed for the meal and ashes they would yield, still he is entitled to an equitable share in the profits and should demand such division by insisting upon a better price for his cotton seed. The above facts will aid him in deciding at what price to sell his seed to the mills.

A Device for a Sucking Cow.

Mr. P. Bacon Davis, Tompkins Co., N. Y., has made a device to prevent a cow from drawing her own milk. He sends us the following description: "Cut a piece of tug from an old harness, of sufficient length to go around the cow's nose, about three inches above her mouth. Split the tug out upon one side for about eight inches, and drive wrought nails, so that the heads will rest against the inner surface of the other half of the tug. By means of a strap, which passes over the cow's head,



A DEVICE FOR A SUCKING COW.

this barbed tug will be secured to the bridge of her nose. The moment she attempts to draw her milk, the points of the nails will come in contact with her udder, and thus be a complete preventive."—The construction of this device is easily seen from the engraving.

Some Practical Points in Peach Culture.

[Mr. W. D. Eversole, Hunterdon Co., N. J., gives his methods in the orchard culture of the Peach, which we append to some notes on what we may call the home culture of this fruit. Why should not every farm produce all the peaches the farmer's family can consume, with a supply to can and to dry, that will last until peaches come again? We know of no reason, except that there is a general impression that peaches will not thrive here and there. "The trees give but a crop or two, and then die," is the frequent complaint. One great obstacle to the general culture of the peach is the notion that it must last and bear for a long series of years, like an apple tree. A very sensible farmer in New England said to us many years ago: "If I can get one crop from my peaches, the value of the wood pays me for raising the trees, the fruit is clear profit, and peaches pay better than corn." The farmer will consider the first cost of the trees. The peach produces better fruit from the seed than any other tree, and if a farmer, or other, can not do better, let him raise seedlings, saving the stones from the best peaches. But he generally *can* do better, and when within reach of nurseries he should purchase budded trees, and be sure of good varieties. Most nurseries offer budded trees at 15 to 25 cts each, at retail, for well known good kinds; of course novelties cost more, but good enough trees can be had at these prices, and by the hundred, trees in many places may be had at half these rates. Good corn land will produce good peaches, and in any locality near a market, such as a manufacturing village, the excess of the first crop, beyond the family supply, will pay for every outlay. Every farmer should set out 10 to 20 peach trees for his home use. The treatment given by our correspondent will apply to a few trees as well as to an orchard.—EDS.]

Mr. Eversole says:—"In planting the trees, I cut off all mutilated roots, and shorten the tap-root to two or three inches. After setting out—[We call particular attention to this point.—EDS.]—I cut off *all branches*, and cut back the top to about waist high, *leaving nothing* but a straight naked stick. Buds will soon appear upon this, and after the sprouts from them have well started, I rub out all but three or four of the uppermost, with which to form the top, or head, of the tree. These branches, never more than five, should be well cut back. When the trees are four or five years old, I cut them back quite severely so soon as the crop is off. My time for "worming" the trees is the first part of June each year. After planting the trees, corn is grown between the rows for two years, then buckwheat until bearing commences, using 200 lbs. of bone to the acre with the buckwheat. When bearing begins I continue the use of the bone, or phosphate, and have the finest colored peaches that are sent from this station.

AS TO RETURNS.—Mr. E. has been engaged in peach culture for 16 years; he cuts back his trees so severely that they do not bear until five years old, but he thinks that by this course they continue longer in bearing. His second orchard, of about 1,200 trees, on eight acres, in 1879 yielded 2,100 baskets, from which the net returns from New York, were $1,475. In 1880 the yield was 1,800 baskets, the returns being $1,400. In 1881, for 1,601 baskets, the returns were $1,714. The aggregate of the three crops was $4,589, from which the cost of picking and the bone applied, $165, being deducted, leaves a profit of $4,424. I think peach culture pays me, and have an orchard of 1,225 trees, now three years old, coming on, and I shall this spring set another. The reason that so few orchards pay is, they are not properly cared for."

English Beans—What are They Like?

In a note about beans of different kinds given last month, English Beans were mentioned as different from those in common cultivation with us. Inquiries show that

PLANT, POD, AND SEED OF THE ENGLISH BEAN.

these beans are less known than we supposed, and to gratify those who ask about them, we give an engraving of one of the dwarf kinds popular abroad. We do not advise their trial here save in far nothern localities or those near the sea where the atmosphere is moist and cool. Indeed, our beans are so much better than these, that it is only those who knew them "at home" who would care to grow them. We at one time had an Englishman as a gardener who was sure he could grow these beans, so we furnished the seed, and he carefully drilled in each one at the proper depth. Before the plants were in bloom, they were so covered with black lice that the green of the foliage was scarcely visible. This bean belongs to a different genus from our common kind. It produces a straight, stout, upright stem, or in the dwarf variety shown, a stem with a few branches. The flowers are produced in clusters in the axils of the leaves. The large upright pods, and the shape of the beans, are shown in the engraving. In England over 20 varieties are known, some of which, as "horse beans," are grown as a farm crop for feeding domestic animals. When beans are mentioned in English agricultural works and journals, this is the kind referred to. What are known as beans in this country are there called Kidney Beans.

Gardening with Covered Soil.

Some interesting experiments have been made in one of the public gardens in France, in what may be termed excessive mulching—that is covering the soil with some material, to completely prevent evaporation. Ordinary mulching with straw, chips, small stones, and other materials, is often used with us to keep down weeds and preserve the moisture of the soil, and is largely practised in strawberry culture. In Europe tiles have long been employed for strawberry beds. These tiles are in pairs, with a semicircular piece cut from one side of each; when put together they surround the plant completely, and the bed is paved with tiles which have circular openings for the plants. We had heard of some experiments in this country with boards similarly arranged, which are reported to have been successful. Many years ago we passed a few hours at Key West, Fla., and noticed that the most flourishing of the small flower gardens were wonderfully clean. An examination showed that the whole surface of the gardens or front yards, was covered with a layer of mortar or cement of some kind, perhaps three inches thick, leaving, of course, sufficient openings around each bush, etc. Here were roses and other flowering shrubs in great perfection under a tropical sun, while the "soil" was swept as clean as a floor. The French gardener's experiments were with market garden crops—carrots, cabbages, lettuce, etc. Among the articles used to cover the soil, was sheet zinc of two kinds, mentioned as white and black, but the difference not described. He shows that in most cases he obtained a largely increased product from the covered as compared with the uncovered soil, in some cases more than double. In seeking a cheaper covering material than zinc, boards were tried with fair success, but that which he thinks will be after all the cheapest, is parchment paper. Many of our readers are no doubt aware, that when unsized paper is dipped for a few seconds in Oil of Vitriol of the proper strength, and then soaked in water to remove the acid, the paper is changed in appearance and texture; it becomes tough, water-proof, and greatly resembles parchment. Parchment paper of the finer kinds, is now a regular article of manufacture. M. Nanot, the gardener referred to, proposes to use old newspapers thus "parchmentized," as the cheapest material with which to cover the soil. He sums up the advantages of his method as producing: 1st—greater rapidity of growth. 2—Lessening of the enormous cost of watering. 3—Avoidance of hard work in weeding, and finally that he gets double the crops that he can from uncovered soil. While we do not expect our gardeners to at once cover their soil with parchment paper, this matter may offer some useful suggestions.

A Flower Bed for Use.—In every garden, no matter how much may be done in the way of ornament, there should be somewhere, a bed from which the flower-lovers of the household can feel free to cut as they please. Flowers in masses, and ribbon lines, or as specimen plants, are well, but it is much better to have a place where those who really love flowers can go and cut a handful with no gardener to prevent. Such a bed should have, of all things, an abundance of the best kind of mignonette, and if confined to annuals, the candy tufts, white and crim-

son, sweet alyssum, sweet peas, stocks, China asters, the annual pinks, and a host of others. Never mind about the arrangement, so that there will be flowers, and a plenty of them, so that all the household can "cut and come again," without feeling that they trespass.

The Butterworts—Pinguicula.

In various wet places from Western New York, southward, are to be found several species of Butterworts. They have rather fleshy leaves, an inch or two long, clustered in rosettes, from which arise the flower stalks, three inches to a foot high, each bearing a single yellow or purple flower, an inch or more wide; the corolla is more or less bell-shaped, lobed at the margin and terminating at the base in a spur. Several species are found in Europe, and are recommended in garden-works there, for planting in moist places. Last year a friend brought us from North Carolina, several plants of the Yellow Butterwort, (*Pinguicula lutea*); these were placed in a pan of soil mixed largely with sphagnum moss, and placed in a cool greenhouse, where they were almost forgotten. This spring they asserted their claims to attention by a profusion of flowers of the most pleasing tint of pale yellow, and quite as interesting as many of the costly exotics. We hope to procure some of the purple-flowered species, of which there are several. They are charming plants for a cool greenhouse, or if one has a natural or artificial bog, they may be planted there. They are said to reproduce themselves abundantly from self-sown seeds. The name Butterwort was given to the European species on account of the greasy feel of the leaves, and the botanical name, *Pinguicula*, from the Latin, *Pinguis*, "fat," was given for the same reason. The greasy feeling of the leaves is due to an exudation from the glandular hairs found in abundance upon the surface of the leaves. The experiments of Darwin show that the Pinguiculas belong to the "Insectivorous Plants." His work with that title, details numerous experiments, in which the placing of insects, pieces of meat, etc., on the leaves, caused their edges to incurve, and produce a greatly increased secretion in the minute glands on the surface.

THE YELLOW BUTTERWORT (*Pinguicula lutea*).

Insect Powder—Pyrethrum.

For more than half a century several species and varieties of *Pyrethrum* have been cultivated as ornamental plants. Some 20 or 30 years ago, "Persian Insect Powder" was sold in small packages as a secret preparation for the destruction of insects, especially cockroaches. It was long before these two, the plants of the garden and those which furnished the insecticide were known to be closely related, if not identical plants. It appears that there are villages in the Caucasus where the chief occupation of the inhabitants has been for a long time the collecting and preparing for export the flowers of *Pyrethrum*. As these people maintained a monopoly of this "Insect Powder," they naturally resisted all attempts to send seeds abroad, and it has been with much difficulty that Prof. C. V. Riley, formerly of the U. S. Entomological Commission, and now the Entomologist of the Department of Agriculture, has been able to procure them. Commissioner of Agriculture Loring has done good service in continuing the efforts of the Entomological Commission to introduce the seeds of these plants, and in sending them for trial to various parts of the country. The seeds sent out by the Department are of the Caucasian (*P. roseum*), and of the Dalmatian (*P. cinerariæfolium*) Pyrethrum. The engraving shows the flower head, and the general form of the leaves of *P. roseum*. Both plants are herbaceous perennials, and, as usual with such plants, do not flower until the second year of their growth. As those who receive the seeds will also have directions for their treatment, we need only say that they require such care as is needed by other seeds that are somewhat slow of germination. While the directions suggest sowing them in a well-prepared bed, we think that the majority will succeed better if they sow the seeds in boxes and treat them by Mr. Peter Henderson's method as described by us in January last (page 6). Ordinary store boxes, such as starch, soap, and other articles are packed in, usually make two seed boxes by cutting them in two, using the top for the bottom of one of the halves. These boxes, 3 or 4 inches deep, are most

THE CAUCASIAN PYRETHRUM (*P. roseum*).

useful for raising seedlings, whether in the green-house, the hot-bed or in the window. In the method referred to, a layer of good loam is put into the box and pressed down level and moderately firm. Sphagnum, or common packing moss that has been well dried, is sifted through a wire sieve that will make it about as fine as ordinary sawdust. A half-inch layer of dried moss of this kind is sifted over the soil. Put upon this a three-fourths inch layer of soil, and upon this the seeds are to be evenly sown. They should be pressed down gently by a board, and then enough fine moss sifted on to cover them well, finally watering from a watering-pot with a fine rose. We mention this in detail, because we think that many who may try Pyrethrum seeds in the open ground may fail, while seeds thus treated will grow under these conditions if at all. All that needs to be done is to keep the moss just damp to the touch. When the young seedlings are large enough to handle, they should be transplanted to good garden soil and set about a foot apart. No product is to be expected the first year, but the plants should be kept free from weeds. Though the plants are no doubt perfectly hardy, so far as the effects of cold are concerned, it will be well at the approach of winter to cover the soil with marsh hay or other litter to keep them from being drawn out by frequent freezing and thawing. The seeds of the double *P. roseum* are sold by seedsmen generally; they are among the most ornamental perennial flowers, and while we have no positive knowledge that they are so valuable as insecticides as the single, the probability is that they are. It has been stated that the common "May-weed," so common along the roadsides (*Anthemis Cotula*), is, when dried and powdered, very poisonous to insects. If any of our readers have experimented with this, we shall be glad to hear from them.

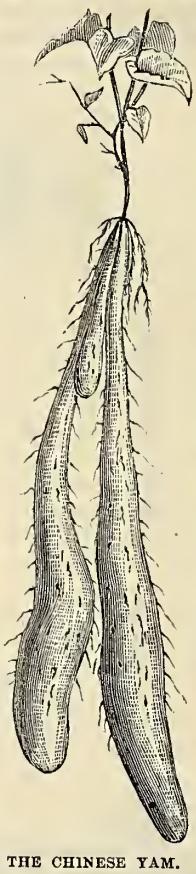
Cabbages and Cabbage Stems.

None of our common vegetables present such a wonderful variety of forms as the Cabbage. Aside from the heading kinds, familiar to all, there are several sorts which do not make solid heads, but their leaves, when rendered tender by frost, are valued by many as Kale or "German Greens." Aside from their leafy portions or heads, there are some varieties of the cabbage especially valued for their stems. Indeed, the stems of the common cabbage may be made of value if the cabbages have been preserved by the old method of setting them in trenches and covering with straw and boards, or by planting them upright in the cellar of some out-building. The usual method at present is, to lay the cabbages head down and roots up, and to cover the heads with earth. This, while it preserves the heads, spoils the stumps, and those who follow the older plan of setting the cabbages, root downwards in trenches, have the stumps in good condition in spring. When cabbage stumps are well preserved and set out early in the garden, they will give at least two good cuttings of "sprouts," which will be found most acceptable "greens"—indeed, so valuable, that in a private garden it is worth while to take the extra trouble required to preserve the stumps, as well as the heads of the cabbage. We have referred to the different forms assumed by the leafy portion, or head of the cabbage; the extreme forms of the stem are equally striking. In noticing some not generally known vegetables last month, Kohl-rabi—sometimes called Turnip-cabbage, was mentioned. As this is but little known outside of city markets, we give an engraving of it. It is simply a cabbage which does not form a head, but stores up the nutriment that other cabbages place in a large bud at the top of the stem, in the stem itself, which is swollen out to form a globular bulb for the purpose. The stories about its being a cross between a cauliflower and a turnip are all nonsense. It is only a variety of cabbage that makes a globular stem. As this stem grows rapidly, it is, if taken early enough, tender and very delicious to those who like cabbages, for it is much more like a cabbage than a turnip. When it gets old, it is stringy, and while not fit for the table is excellent for domestic animals. In England it is, on some soils, grown in preference to turnips, as it is free from the insects that attack the turnip crop. What a wonderful difference between the Kohl-rabi, with its stem at least as thick as it is high, and that cabbage which has been grown for centuries on the Island of Jersey, where the influence of climate and soil has been to produce tall stems. These stems are so long and so useful in various ways, that an English journal some years ago had an article on "Cabbage Timber." The visitor to the Island of Jersey sees on every place a patch of these strange cabbages, with stems 6 to 8 feet or more high. The leaves are used for packing butter for market and feeding pigs, while the stems are put to various uses. In the principal town, St. Heliers, the sign, "Maker of Cabbage Canes," is quite common, and few persons visit that charming island without taking away one or more walking sticks made from cabbage stems. Sometimes the stems grow to the hight of 10 or 12 feet, when they are used as rafters to sheds, etc. It is said that one of these cabbages had grown to the hight of 16 feet, was left for seed, and that a magpie made its nest in the branches which sprung from it in the spring.

KOHL-RABI OR TURNIP CABBAGE.

The Chinese Yam (*Dioscorea Batatas*).

The history of this Yam is interesting as showing how the real merits of a plant may be obscured by extravagant claims made concerning it. About 30 years ago the French Consul in China sent to the *Jardin des Plantes*, in Paris, some tubers of a Yam, *Dioscorea Batatas*, which was used for food in China. It was at the time when the rot threatened to put an end to potato culture, and every plant promising to be a useful substitute was regarded with interest. So soon as the Yam had sufficiently multiplied, the eminent director of the Paris Garden, Decaisne, recently deceased, sent to this country to his friend, the late Dr. Torrey, a small tuber of this precious plant. We well recollect the little tuber, packed in a box of cotton, the very beginning of the Chinese Yam in America. It was a miserable little thing, not larger than one's finger. The good Dr. Torrey was a botanist, but not a cultivator, and doing what he thought was for the best, sent this first tuber to a nurseryman of his acquaintance near New York City. He made a most unfortunate choice, for soon after the recipient advertised the plant and set forth its merits most "extravagantly."



THE CHINESE YAM.

The claims made as to its value were so far beyond all possibility that the *American Agriculturist* took an active part in showing up their absurdity and treated, not the plant, but the accounts given of it, with the ridicule they deserved. Yet, after more than a quarter of a century, the Chinese Yam is still offered in the catalogues, under its proper name, and sometimes there appears a sensational advertisement of parties who offer it as the "Cinnamon Vine." Several recent inquiries make it proper to describe the plant. It is a perfectly hardy climber, which, if given support, will run to the hight of 15 or 20 feet, producing an abundance of dark green leaves, and small spikes of whitish fragrant flowers. Without reference to anything else, the plant has a real value as an ornamental climber. It produces a large, fleshy tuber, or root, 18 to 24 inches or more long; near the surface it is scarcely an inch through, but enlarges as it goes downward to a diameter of three inches or more. If to this peculiar shape is added the fact that the root is as brittle as glass, it will be seen that whatever value it may have as food, the difficulty of digging it is such as to make it practically unavailable as a crop. To dig down two feet to secure a root crop, is a formidable task, and the peculiar shape and brittleness of the Yam prevents all pulling; it must be dug from the very bottom. As a table vegetable it is very acceptable, either boiled or fried. Some friends of ours keep a patch of it in their gardens for the sake of the occasional variety it affords. It is not worth cultivating as a crop, but it may be put in some corner as a curiosity, and if one is in need of it, he can find exercise in endeavoring to dig up a few roots for dinner. A friend once suggested, with a view to future possibilities, that this Yam should be planted in waste places all over the country, so that, should a famine occur, there might be everywhere an underground store of available food. The plant is propagated by cuttings of the upper and smaller portion of the root, but especially by little bulblets, which are about the size of small peas, and produced abundantly in the axils of the leaves. These bulblets are sold by seedsmen generally, and they sometimes offer small roots. As an ornamental climber, the Chinese Yam is worth growing, but not valuable for a food crop.

Taking Produce to Market.

We have shown various reasons why every farmer should have a good garden to supply his own family with a variety of vegetables the year round. To these we now add the fact that in many places the garden may be a source of profit. If the farm is within a few miles of a town or village, especially if a manufacturing place where many laborers are employed, there will always be a ready sale for all the surplus of the garden at profitable prices. In such localities an excess beyond all probable wants of the family should be provided for in sowing and planting. To get the best returns some care must be observed in preparing the articles for market. The market-gardeners understand how far appearance goes in selling their produce, and take great pains to put up everything in attractive form. A farmer in going to a village may pull up a half bushel each of beets, carrots, or onions, and throw them into his wagon body; if he sells them at all, the returns will be small. Let him prepare the night before; pull the same number of these vegetables and take them to a shed. Wash each kind separately in a tub of water, cut off all long roots and needless leaves, and tie them in bunches of 3, 6, or more, according to their size. We are sure that the vegetables thus treated will bring at least three times as much as the same if sold loose and unwashed. So with whatever else is offered for sale. Store boxes can be had for little or nothing. They may be easily cut down to hold pecks and half pecks, and be used for peas, beans, and other things sold by measure. Some of these cut in two to form trays 2 or 3 inches deep, may be used for cucumbers, tomatoes, etc. A little care in the use of freshly cut grass, cabbage, rhubarb, or other large leaves, upon which to lay or with which to cover vegetables, will add much to their neat appearance, and will pay well for the trouble.

Kill the Potato "Bugs."—It is important to destroy the first brood of potato beetles. This brood comes from the ground in early spring, and the beetles soon lay their orange-colored eggs in clusters on the under side of potato leaves. These eggs are readily found by turning up the foliage with a hoe handle, and picked off and destroyed. If this is omitted, the larvæ, or "grubs," soon hatch out, and begin their rapid destruction. Poison in some form must now be used. The two leading insecticides are Paris Green and London Purple. Both are arsenic compounds. The "green" is a manufactured article while the "purple" is a by-product or refuse compound from the dye factories and therefore cheaper. These substances are used either dry or wet. In the former they are mixed with 30 to 50 times their bulk of flour or plaster, and dusted or sifted on—best while the dew is on, or soon after a rain, that the wet foliage may retain the substance. In the wet method, which is now generally preferred, the poison is stirred in water—a large tablespoonful or so to the pailful—and applied through a sprinkler, stirring it very frequently as it does not dissolve. The "bugs" have been in most potato growing regions so long that a full discussion of the subject is unnecessary. It is important to remember that these arsenic compounds are deadly poisons, and to be used with great caution. Any "green" or "purple"—it is fortunate that they have marked colors—in the house, should be put where no one can use them by mistake, and out of reach of children.

About Savoy Cabbages.

An Englishman once wrote a work "On things not generally known." Were we to write such a work, it should begin with Savoy Cabbages. Our farmers and others raise cabbages year after year, and very good cabbages of their kind. But the Savoys are of a so much better sort when they come to the table, we are sure that, when once tried, very few would grow any other. A Savoy

A SAVOY CABBAGE.

Cabbage is as much superior to the common hard-headed kinds as the best cultivated grape is superior to the common fox-grape of the woods. Indeed, the English works on Gardening treat of Cabbages under one head and Savoys under another, as if the two were entirely different vegetables. The Savoys are a distinct race of cabbages; their leaves are always strongly *bullated*, as the botanists would say, but "blistered" will perhaps describe the peculiarly wrinkled character of the leaves. The heads are never very hard, but the loose outer leaves cook tender. The engraving gives the general appearance of this race of cabbages. When our garden experience commenced, there were various other cabbages and "The Savoy." Now the catalogues give half a dozen varieties of Savoys, beginning with the "Early Ulm," and ending with the "Drumhead Savoy." We do a good service to those who do not know this class of cabbages to advise them not to make a sudden change from old and approved kinds, but to sow among their late cabbage seeds a paper of the "Drumhead Savoy." We are sure when enjoying a farmer's "boiled dinner" next winter, they will thank us for the suggestion.

Golden Bell, or Forsythia.—We once used some stems of this as stakes for a house plant, and they soon came into full bloom. By placing cuttings of this very common shrub in water, the bright yellow flowers may be had in mid-winter. The Leather-leaf (*Cassandra calyculata*), very common in northern swamps and cranberry bogs, will bloom finely when thus treated.

Melons and their Enemies.

Each succeeding year, raising a good crop of melons seems more difficult, largely due to the increase of insect enemies. Last year the drouth cut off the crop over a wide area, but in seasons of sufficient rain the melons are far less abundant than formerly. Though some insects attack the vine after its growth, and even injure the fruit itself, the greatest difficulty is with those which beset the very young plant before it is fairly established and vigorous, and it remains weakly the whole season. The first step in melon culture is to get strong young plants. In field culture, growers put in a great abundance of seed, trusting that a sufficient number of plants may escape, by the aid of dusting with lime, to make a stand. In the home garden, where every care is taken to forward Tomato plants, similar care might be profitably given to the melon. The method advised last month, p. 142, for cucumbers—sowing the seeds upon inverted sods, will also answer for melons; or the seeds may be sown in pots of light rich soil. The object, thus late in the season, is not so much to hasten the plants, though covering on cool nights will aid in this, but to have them where they can be cared for and kept free from insects. A free dusting of air-slaked lime, or a mixture of wood ashes and land plaster, will aid in keeping off insects. We have not tried the Insect Powder (*Pyrethrum*, described elsewhere), but do not doubt it would be useful. The frames covered with mosquito net, mentioned last month, to put over the plants after they are set in the open ground, are well worth the little trouble required to make them. Such frames, covered with one pane of glass each hill, will do much to forward melons. The great point is to get strong plants as soon as possible before the later insects attack them, and if the hills are not well manured, a little guano worked in with the soil will be of much service. After the plants are well established and promise a crop, the White Grub, or the Squash-borer, may put a sudden end to some of them. If a vine suddenly wilts, dig it up and find the White Grub at the root before it goes to another plant. Covering a few inches of the lower part of the stem with earth has been advised to prevent the borer from depositing its eggs.

The varieties of melons are numerous, and the catalogues offer new ones every year. Some of the old kinds are of the highest quality, if they can be had true to name, but melon seeds sometimes get badly mixed. Among the green-fleshed sorts, "Ward's Nectar" has long been our standard of excellence. "Cassaba" is very large and good. Of those with salmon-colored flesh, "Surprise" will convince those who think melons of that color are not good, that here is an exception—indeed, it is of the highest quality. "Christiana," of the same color, is one of the earliest. This, for some years, had so badly deteriorated as to be valueless. Within a short time some New England growers have found pure seed and restored it to its original excellence. If one raises several kinds of melons in his garden, he cannot depend upon his own seed. It may be pure, but more frequently will produce a crop of mongrels. Melon seed will keep good, if not improve, for 10 years or more, and when one gets hold of a good sort it is well to lay in a stock of seeds to last for several years.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Rain-water Strainer.

BY L. D. SNOOK.

During every brisk shower the roofs of buildings are washed clean, and if the water is allowed to flow directly into the cistern, much dust, dirt, leaves, etc., is carried with it to render the water impure. This is particularly noticeable with shingled roofs. This can be avoided by having the inlet pipe so arranged that the first barrel or so of

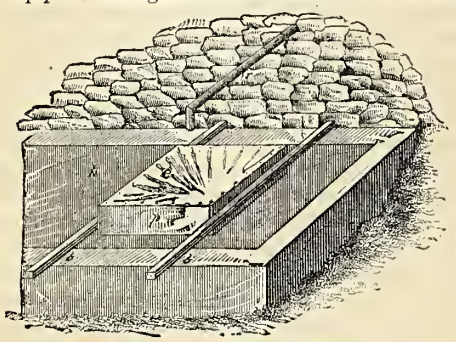


Fig. 1.—STRAINER FOR CISTERN.

water will run to waste, and the balance be conducted to the cistern, and this without attention during each shower. Figure 1 shows a portable strainer, consisting of a box, *p*, three feet square and four inches deep. A bit of coarse cloth is tacked to the upper edge; this will allow water to pass quite rapidly, and should be six inches lower at the center than at the sides. Supports or handles, *b*, *b*, are attached to the sides, the ends of which rest upon the walls of the cistern, *h*. The inlet pipe *r*, discharges immediately upon the cloth *c*, which retains all leaves, coarse dirt, etc. This cloth should be cleaned three or four times per year, which is easily done by placing the box *p*, bottom up and dashing water upon the cloth. The strainer described is for a cistern located in the cellar and easily accessible. The strainer shown in fig. 2, is for use in the side pipe. The manner of constructing is fully shown in the engraving. It is best located about five feet from the ground, or within easy reach. The box *l* is 18 inches square and 6 inches deep. The strainer should be depressed about one foot that it may not overflow during heavy showers. The box should be easily removed for cleaning the strainer, etc. In either plan to prevent the water from dashing too violently upon the cloth it should fall upon a sieve or something to retard the fall and divide the stream.

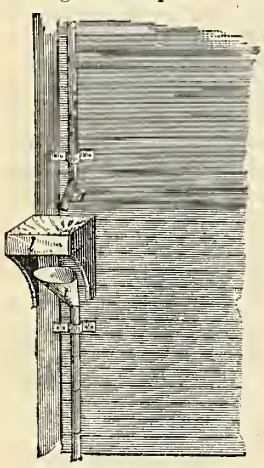


Fig. 2.—STRAINER FOR WATER PIPE.

Something about Pancakes.—Some people suppose that pancakes are always unhealthful, but I think, if well made, they are more wholesome than either sour or heavy bread. It is often said that they are just as good without as with eggs, but I don't think so. Made without eggs, they are very apt to be either "soggy" as they cool, or too thick to be enjoyable. When eggs are plentiful, allow one egg to each cup of "wetting," usually sour milk or sour buttermilk. When really sour, milk does not keep increasing in sourness, though it soon becomes bitter. Each cup of really sour milk or buttermilk, requires half a level teaspoonful of soda carefully dissolved before mixing it with the batter. White flour alone is not so good as genuine graham, or a part corn-meal (well scalded), and part white flour. Old bread soaked in sweet milk, or in sour milk with the soda added, or cold hominy, or oatmeal, or Indian mush, all work into good pancakes. Make the batter just thin enough to spread easily upon the griddle, when dropped from the spoon. Grease the griddle lightly, and avoid a "smudge." F. E. R.

Conveniences in Houses.

Mrs. Anna Woodruff, of Blue Earth Co., Minn., sends us a number of suggestions on the above subject, which we summarize in part: There are many little conveniences that may be added to almost any house plan, at very trifling expense, which are not thought of by architects or builders, who, of course, cannot appreciate these things as well as the practical house-keeper. But if they are not provided when a house is built, they seldom get into it afterwards. Take, for example, the excellent prize-house plan in the *American Agriculturist* for March (the reader will do well to have the plans in hand, when reading what follows.):

At very small cost the omitted corner portion, marked "Porch," could be roofed, enclosed, and floored. There would be no additional walls needed, as those already there would more than cover the room, if set on the *outside* of the Porch. This would give an additional room, 6 by 10, of far more value than an outside Porch, as it is now. This gives space enough for another bed-room, or a store-room, or a children's play-room, heated from the kitchen; or if not wanted for these, it would be valuable as a wood or fuel room. If this "Porch" space be thus enclosed as a room, the entrance door could be put on the other, the main side of which should front the street. With only the expense of two posts, a few boards for floor, and a few shingles for a roof, this door can have an open Porch; or its sides can be enclosed with open work, by using strips the width of common lath, and these may be covered with some ornamental vines—the wild woodbine transplanted; or plant seeds of the wild cucumber, or morning glory, or climbing nasturtium (*Tropæolum*), or bulbs of the Madeira vine, not forgetting a few sweet peas. All the above involves very little additional expense. The door and casings were estimated for in the plan as given.

On the approach of winter, the lattice can be covered inside with tight boards, and a storm-door close the front, while inside of it there may be hooks for hats, overcoats, and umbrellas, with a box seat and hinged covers for rubbers, overshoes, etc., and a broom be hung there for brushing snow from the feet, and a coarse mat for muddy weather; also a scraper of wood, or any bit of iron, on the steps. These will save much litter from the living room, or "parlor." A similar but larger Porch at the back door, with box seats or shelves on each side, will cost little, and be a wonderful convenience. It will serve as a wash-room in hot weather, using the benches or box covers for setting on tubs, pails, baskets, men's wash-basins, etc. When the vines are large enough to shade it, this rear piazza will be a cool place for resting, for lunches, etc., and if enclosed by boards in winter, as described for the front Porch, it will keep out cold, and serve many useful purposes.

In digging the cellar, throw the earth where the sides need banking up, and put sods around the edges of the levelled earth These will make the banking up firm and permanent, and flowers may be planted on little beds in it, to be watered with the fertilizing waste water from the house.

As the chimney is at the end or corner of the kitchen furthest from the door, the stove pipe should be long enough to allow the stove to be set near the pantry, and thus daily save hundreds of steps. Or better still, run the pipe up through the ceiling of the room, with a tin or earthenware collar or thimble, and carry it along the upper part of the chamber to the chimney. This will warm the chamber also.

Let the cellar extend under the pantry, and omit the floor boards under the "dressers," substituting open wire netting, or strips of wood, with simple doors in front. This will form a cool closet for food, and save many weary steps up and down the cellar stairs....There is some space in the stairway, between the chamber and the rear roof, where stationary drawers or boxes may be put in. If the main Porch be filled out as a room, as first suggested above, there will be space over it for storing, to be reached by a small door from the front bed-room, as suggested for the rear portion, in describing the house.

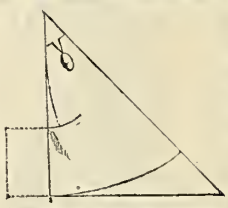
In each chamber a corner closet, with clothes hooks, and shelves above them, can be cheaply made by the addition of a simple door, and a board on each side; or nail strips across, and hang curtains in front, as a protection to garments.

But whatever else is omitted, do not omit a sink with a waste-pipe, near, or even in the pantry, and have a cistern, with a pump by the sink. The first cost is very small; the saving of work, of steps, of strength, of health, will repay the cost many times every year.

All the above improvements might not cost $25, while they would add very greatly to the roominess, convenience, and comfort of the house.

Children's Aprons.

Aprons for a child from two to five years old, cut as shown in figure 1, are easily made. The fabric is folded so as to bring the bias down the front of the apron, and the straight edges at the back. A small gore is cut out on the shoulders and long sleeves are set in the arm size. There are no seams but the one on the shoulder. The apron is faced with a straight piece of fabric, and is closed in the back with buttons and button-holes, fig. 2. Strings sewed under the arms and tied at the back, make it more "dressy," fig. 3. If cut as for an apron, except that it is buttoned in front, the pattern makes the comfortable little wrapper illustrated in figure 4. For summer it is cool and no



1.—PLAN FOR CUTTING.

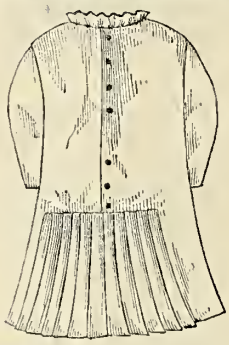


Fig. 2.—FRONT OF APRON.

Fig. 3.—SIDE OF APRON.

trouble to iron. For winter it should be made double; old calico makes a good lining. The same pattern can be used for dresses by adding to the skirt the extra material indicated by the dotted line. The piece shown by the dotted line above the waist line, should be trimmed out, or the lower part of the waist will be too full. The waist of the dress should be cut very long; pleat the top of the skirt to fit and sew together in a seam: close the waist with buttons. The extra fullness can be gathered, and a narrow flounce put around the bottom to lengthen it if necessary. Striped goods do not look well cut by this pattern, but for plain fabrics, or those with even checks or small spots, it is all that could be desired. MRS. BUSYHAND.

Fig. 4. SUMMER WRAPPER.

Christmas and Other Winter Decorations—Begin Now.

When the time is at hand to prepare for Christmas and other holiday decorations, whether in the church, the sunday school, or the home, how many have wished that they had made preparation last summer? The things most heeded then, besides the evergreens that are at hand, are, dried ferns and grasses, and those bright persistent flowers known as "Everlasting." The ferns and grasses we may speak of later, but the time for the everlasting flowers, if they are wanted for winter, is *now*. There are so many plants the flowers of which have a papery texture, that allows them to keep their form and color when dried, that some seedsmen give in their catalogues a separate list of the seeds of "Everlasting Flowers." It may be said of these, that they are mostly from tropical countries, and that their seeds should not be sown too early, as the plants succeed best in our hot summer weather.

It is very easy for those who grow flowers at all, to have an abundant supply of these "Everlastings," if they observe a few precautions. It is of the first importance to cut the flowers just as they are about to open, before they are in full bloom; otherwise they may fall apart. The next point is, to tie them in small clusters, and hang them in a room free from dust, where they will dry thoroughly. When quite dry they may be laid away on shelves or in boxes, until wanted for use, but not packed so that they will crush one another out of shape. A vast number of these flowers are imported from Europe, and meet with a ready sale as the holidays approach, but the majority of these, indeed all the best of them, can be grown in an ordinary garden. We enumerate, alphabetically, the most desirable, the seeds of which are to be had of the principal seedsmen. *Acroclinium roseum*, and *album*, among the best. *Ammobium alatum*, small globular heads of white flowers. *Gomphrena globosa*, sometimes called "Bachelor's Buttons," and "Globe Amaranth." The globular heads, white, pink, red and yellow, should be cut very early. *Helichrysum bracteatum*, and others; these are the best known "Eternal Flowers," and the catalogues give about a dozen varieties, from white and yellow, to dark crimson. Their flowers are the largest and most showy of all. *Helipterum Sanfordi* has large clusters of minute yellow flowers. *Rhodanthe maculata*, *Manglesii*, and varieties, are the most delicate of all. The flowers are small, but so beautiful, that they are worth the extra care that they may require. The *Xeranthemums*, of which there are several, are good white flowers. The seeds of all are best sown in boxes, where the plants can be cared for until large enough to set out in the garden. Of those named, the *Helichrysums* are the strongest growers, and need the most room, at least two feet apart. The seeds of the *Gomphrenas* or "Globe Amaranths," are often slow to start, and it is better to pour scalding water over them and allow it to cool, before sowing.

Abusing The Sense of Taste.

BY A MINNESOTA HOUSEKEEPER.

The sense of taste, like all others, is capable of cultivation, and may add greatly to our pleasures, while also serving a useful purpose, and yet no other one of our five senses is more frequently made to minister to human degradation. The fault begins in childhood—even in infancy—and here is the most fruitful source of the intemperance that devastates the land. The notion is very common that stimulants are craved by every one. Those who assert this, are probably themselves the victims of stimulants, and thus misjudge the desire for them to be universal. But thousands can testify that no such craving is even consciously felt. Much observation and inquiry has convinced me, that this craving is not natural, that it does not exist when the stomach is supplied habitually with healthful nourishment and with that alone. This mistake is the result of another erroneous notion, viz: that children naturally crave sugar, candy, pickles, and other artificial sweets and acids. Human stomachs, and the tastes that should serve them, are usually led astray, almost from birth. The infant is fed to supply it with the nourishment required for its growth, health, and comfort. It is a duty and a privilege to make that food as agreeable to the taste as we can, without interfering with health, comfort, or growth. It has been proved over and over again, in private experience, that babies and children well nourished on plain food, are healthy and happy without sugar, except as they get it in their natural vegetable and animal food. They get all the acids they need in the same way, especially from a moderate amount of fruit, and their teeth are sound, and their spirits lively. Supply the same well-fed children with candies, at first they care little for them, but a craving is easily cultivated, and the more they have, the more they want, unless made so sick by overeating of sweets, as to associate them with the pain they have imposed. This seldom happens. Following the craving for sweets, or excessive eating of fats, thus cultivated, comes the morbid desire for pickles. Cloyed and wearied by concentrated and indigestible substances, the appetite refuses plain food and nourishment, and the stomach is too weak and weary to carry on its natural healthful work. Of course it needs, first rest, and then careful nourishment, made very easy at first, until the stomach recovers its power. This is seldom realized, and the lash is applied instead, in the form of some kind of stimulant, which shall make the weary stomach work, whether it feels like it or not. This gives temporary relief, but the craving for stimulants is very speedly established. In some cases it may be inherited—"the sins of the parents visited upon the children."

Good and Bad Cooking.

House-keepers or cooks do a vast amount of mischief by the perversion of taste, and the subsequent derangement of the stomach. Making sour bread is one of their most common sins. Many do not know when bread is sour, and supply it with a distinctly acid flavor, believing that it is very "nice," because it is so very light. They suppose bread is sour only when all the vinous firmentation has changed to the acetic. Bread is sour as soon as it tastes at all sour. This may go on increasing, but to the best bread-maker the least acid flavor is a source of grief. Really good bread is positively *sweet*, and will be just as light and spongy as the nicest sour bread, if good material and proper care are used. In families where the taste is perverted by sour bread, other abominations are usually tolerated—biscuit tasting either of excess of soda, or of bitter buttermilk; vegetables seasoned with bad butter, pie-crust strongly flavored with lard or tallow; cake tasting of rancid butter, etc. Along with this diet naturally goes a deal of spicing to cover the bad flavors, or much washing down with hot, strongly seasoned coffee or tea. Sour bread is never good in milk, and children prefer to lunch on pie or cake, rather than on sour bread and milk or butter. The whole family eat as little bread as possible, and the butcher's bill is very heavy—and they call all this "good living!" Just count the empty bottles labelled "Bitters" or "Blood Purifier," that lie around the house, where sour bread and "good living" (as generally understood), either or both hold sway!

The plainest food can be made to taste very good simply by selecting, preparing, and preserving it. Those who eat food selected and prepared with chief reference to its nourishing qualities, eating modcrately to gratify a natural appetite, instead of a morbid craving, really enjoy eating more than the gormand or glutton, whose chief pleasure is in eating, and who must have everything fixed up "good," with condiments or hot sauces, and washed down with stimulants. He becomes incapable of detecting and appreciating delicate flavors, and so wears out the sense of taste, that it is hard work to find anything that he can relish; while a dish of good bread and good unskimmed milk, seems very delicious to people with undepraved appetites. Recently I heard a little girl who does not like bread and milk, say of a piece of bread and butter, that "no cake could taste better!" The bread was made of good whole wheat flour, stirred up with nothing but water, and baked in gem irons. It was spread with creamery butter, and I think any one to be pitied who would not like the taste of such gems and such butter. Thorough chewing adds to the pleasure of the sense of taste, this taste resides in the tongue, and in the soft palate and its arches. One common way of abusing the sense of taste is, by eating fast with very slight chewing, so that the food is not retained in the mouth long enough to give the nerves of taste a chance to fairly taste the quality of the food eaten. But for this rapid eating, and washing down with agreeably flavored drinks, much that is usually eaten would be rejected as either bitter or tasteless.

An Egg Tester.

A bad egg is never welcome, and any simple device that will quickly and satisfactorily detect the quality of an egg, is important; we have many calls for something of the kind. Sixteen years ago (Feb., 1866), we gave the very simple method shown in fig. 1. The egg is so held that the hand cuts off all direct rays of light from the eye, except those passing through the egg. The egg may be held towards the sun, or better, toward the light from a lighted candle or lamp in a dark room.....Figure 2 shows a tester we described 11 years ago (Dec. 1871). It is a tin cup 3 inches high, and 2½ inches in diameter, narrowed in at the top to hold an egg endwise. A small

Fig. 1.—THE OLD WAY.

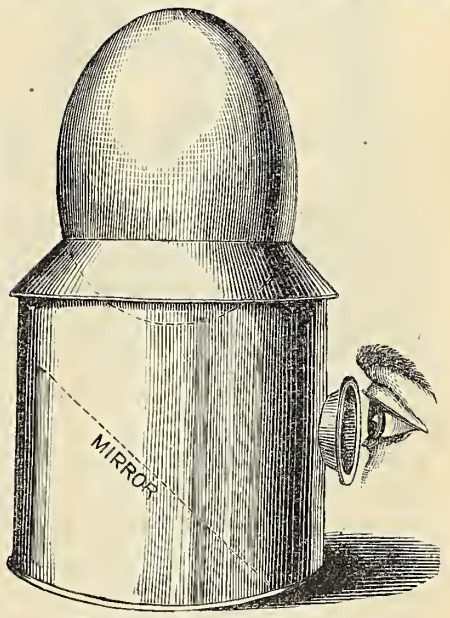


Fig. 2.—A "CUP" EGG TESTER.

mirror is placed as shown by the dotted line. The light passes through the egg, and forms an image upon the mirror which is distinctly seen at the side opening. The same principle is used in the tester shown in fig. 3, only more than one egg is examined at once. This is a small, low box, either of wood or paste board, with a number of "egg holes" cut in the cover. A mirror is placed within, and one side of the box is cut away for observation. If the interior of the box is painted black, the effect will be better. The quality of egg is determined by their degree of clearness. A good egg shows a clear reddish translucent light. The ease with which testers can be made and used, should insure good eggs for the table, and fertile ones for incubation.

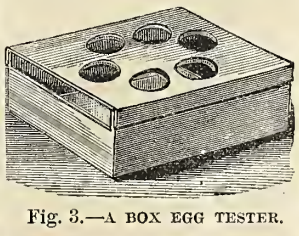


Fig. 3.—A BOX EGG TESTER.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

Several young friends ask me to tell them about studying flowers; they of course mean also the plants which produce them: one youngster, "H. D. B.," asks how I first began to study plants, and the way to preserve them by drying.—How I first studied plants! This takes me far back, to the time when a good friend, quite as old as my father, was always ready to teach me

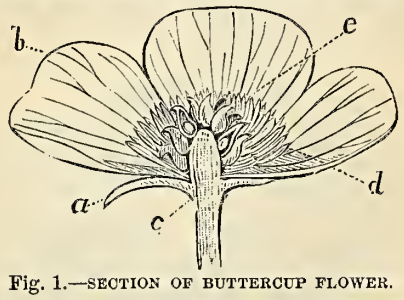


Fig. 1.—SECTION OF BUTTERCUP FLOWER.

about such things. I should be very happy if I, as "The Doctor," could help you as that friend aided me. In

Beginning Lessons About Flowers,

I would, at the very start, impress you with one fact. As you go about the woods and fields you see various kinds of flowers, and in the garden you see many other kinds. Some of these flowers are large, others are small; they are of very various colors and shapes, yet you know them, whatever may be their size, shape or color, as flowers.

Now, What Are Flowers For?

If you look in the vegetable garden, you do not expect green peas or cucumbers, unless the vines have bloomed; you would not expect strawberries, or raspberries, unless the plants had flowered; nor would you look for apples unless there had been apple-blossoms. You well know, I think, that the flower is the beginning, or the starting point of the fruit. But a *fruit* need not, as some suppose, be something juicy. The pea, the bean, the wheat kernel and the corn kernel, are just as much fruits, as are the peach and the apple. Whatever follows the flower, if it bears a seed, is a fruit. In the garden you see a great variety of flowers; in early spring there may be hyacinths and tulips; later there will be lilacs and roses.—So in the woods and fields there will be buttercups, violets, chickweeds, and wherever you turn, flowers of some kind. Now the very first thing that I would teach you about flowers, is this: However unlike flowers may be in size, in shape, or in color, they all have one end in view, which is

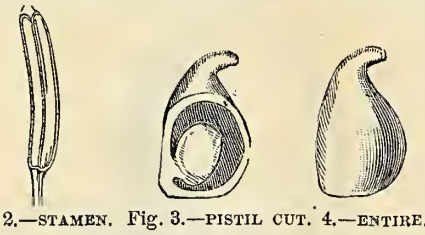


Fig. 2.—STAMEN. Fig. 3.—PISTIL CUT. 4.—ENTIRE.

The Production of Seeds.

These, if sown, will produce other plants of a similar kind. But whether large and showy, or small and not attractive, each and every flower (at least every wild one,) has for its object the formation and the ripening of the seeds of the plant to which it belongs.

About the Flower,

I say "the flower," because however flowers may be unlike—and they show a wonderful variety in some respects, they are *all made upon one general plan*. If you thoroughly understand one flower, its parts, and the uses of these parts, you will be able to understand all other flowers. It makes but little difference what plant we start with, but we will select one, common about everywhere, and one every youngster knows, the Buttercup, and there is hardly a place in the whole country, where one or more kinds can not be found. Some grow in damp soil, others in meadows among the grass; the road-sides and the dry hill-sides furnish others. So we will take the Buttercup as a starting point in the study of flowers. Having gathered a number of Buttercup flowers, you can look at them at first in their natural state; then take one, and with a sharp knife cut right down through it. One of the halves will appear as in figure 1, which is little larger than the real flower. Beginning below, you will first see some green flower-leaves, *a*, five of them. Then, next above these, five large yellow flower-leaves, *b*. I call these flower-leaves, because, as we shall see later, they are much like other leaves, but as they appear in the flower they have distinct names which are easily learned. Thus the set of green flower leaves, *a*, taken together, are the *calyx*, and each separate piece is a *sepal*. Learn these names now, as we shall find similar parts in most other flowers. The bright yellow parts, *b*, are called *petals*, and the whole five together are the *corolla*, which is the showy part of the flower. You will notice that the end of the flower stem, *c*, projects up into the flower and that all the other parts are attached to it. This end of the stem, whatever its shape may be, is the *receptacle*, as it receives and holds all the other parts of the flower. Just within the petals are many little pod-like things on stalks, *d*, which are called *stamens*, and within these are other differently shaped objects, *e*, called *pistils*. I have given you these five parts and wish you to learn their names. Remember now; beginning below, we have the *calyx* (its parts being *sepals*); next the *corolla* (its parts being *petals*); then the *stamens*, and inside of all, the *pistils*. These names may be new to you, but they are not many or difficult, and I wish you to learn them, as they are all the parts that any flower has, and many flowers do not have all of these.

Fig.5. PEA FLOWER.

Now look again at your Buttercup flower. You see that these parts are in sets, one above the other—first the calyx, next the corolla, within this the stamens, and in the center of all the pistils. If you look at the Buttercup flower before it opens, you will see that the first two sets, the calyx and the corolla, are bent over and cover the parts that are within. These two sets are called the floral envelopes, their use being to envelope and protect the smaller parts within. I called the parts in the very center, pistils. There are several of these in the Buttercup flower; shaped as in figure 4. In cutting down through the flower, as in figure 1, you will be very apt to cut open one or more of these pistils, and if you have a magnifying glass, you may be able to see that each one has a hollow part in which is a little seed-like body as in figure 3. Look at this pistil, and you see that it is large and hollow below; above there is a short neck, and at the very top a roughish place. The little body shown in figure 3, is called the *ovule*, and that part of the pistil which holds it is called the *ovary*. The ovule is the very beginning of the seed—and one of the curious things about the flower, is that the ovule can not become a seed without help from the stamens. A separate stamen is given in figure 2. You will see that it is a little case or pouch, at the end of a small stalk. This pouch is called the *anther*, and its little stalk is called the *filament*. Now when the anther is quite ripe, it bursts, usually by a crack on each side, and lets out the finest

Fig. 6.—PARTS OF PEA FLOWER.

possible dust, called *pollen*. The curious thing about it is, that unless some of this pollen from the stamens falls upon the upper part of the pistil, no seed will be formed. But there are so many stamens and so much pollen, that some of it is quite sure to fall upon the pistils. What takes place can not well be described just now, but it is sufficient to say that this pollen, or fine dust, so acts upon the little ovule in the ovary part of the pistil, that it grows and forms a seed. Now let us review our Buttercup flower: We have its green and leafy *calyx*, then its golden-yellow *corolla*, then many *stamens*; and within these, many little *pistils*. The pistils become little seed pods after the *pollen* has acted upon them.

Now that you have learned the names of all these parts in the Buttercup flower, and their position in rows or series one above another, you will be ready to look for the same parts in any other flowers you may find. First, I must tell you that, while the Buttercup has all the parts that you will find in any other flower, every flower will not have all these parts. Not only will there be in some flowers no corolla, but sometimes the stamens will be in one flower and the pistils in another flower. But we can talk about that another time. What will puzzle you most is the fact that the parts of the flower, all of which are so distinct and separate in the Buttercup, may grow together in other flowers. In some flowers the sepals of the calyx are all in one piece, and in many other flowers the parts of the corolla are united.—Besides this, the same parts of the flower are not of equal size and shape as they are in the Buttercup. You will be puzzled by this, and I can now give you but one example of the many unusual forms you will meet with. When the peas are in bloom, you may not at first see how the pea flower, figure 5, is actually made upon the same plan as the Buttercup, while in appearance it looks as unlike it as can well be. Carefully pick it apart, and you will find five petals. Though they are unlike in size and shape, as shown in figure 6, you will see that they are petals, and stand in the same place with respect to the other parts of the flower as do the *regular* ones of the Buttercup. But it will not do to undertake too much at once. If every one of my young friends will study well the flower of the Buttercup, learn the different parts, and their position, and their uses, they will be well prepared to understand all other flowers. However unlike flowers may seem to be, we shall learn, as already said, that all are made upon a similar plan, and if one is well understood, it is a key to all the rest. THE DOCTOR.

Our Puzzle Box.

PATCHWORK.

(Find in each of the following sentences the letters necessary to spell the implied word. EXAMPLE.—To impair. *Answer.*—Mar. "Harm" would not fill the requirements, as there is no h, in "To impair.")

1. A mixture of things. Not "hash," which would require two h's).
2. A free black on the West India Mountains.
3. A roll,—strip of cloth.
4. To lean,—to remain.
5. A meadow,—a plain.
6. One not a clergyman.

DISLOCATION.

(Find in the following lines the words necessary to form a well-known proverb).

"Will you come to the bower I've shaded for you?"
From the crest of the hill there's a beautiful view,
There's a lovely green meadow where lambs gaily play,
Should the walk be too long we can rest by the way.

ALPHABETICAL ARITHMETIC.

(The letters stand in the place of figures.)

```
RSY)KOELGCY)YOORL
     AGL
    GCOL
    GYRA
      CEC
      YSA
    GROY
    GRRY
       CS
```

PUZZLE.

Take fifty and five and by nothing divide,
And then add one-fourth of a tome,
And if placed aright you'll need nought beside
To show you a sweetner of home.

NUMERICAL ENIOMAS.

I am composed of 11 letters:—
My 1, 5, 10, 7, 2, is a piece made up of different authors
My 11, 9, 6, 4, is to probe.
My 3, 2, 7, 5, is to denote.
My 8, 5, 11, 9, is a boundary.
My whole is a great blessing. BELLE SPAR.

2. I am composed of 23 letters:—
My 1, 5, 19, 4, is a kind of fairy.
My 17, 20, 1, 4, 11, is spiritless.
My 3, 9, 1, 18, is a narrow fillet.
My 12, 13, 16, 14, is a nobleman.
My 4, 10, 7, 2, 6, 11, 8, 15, 22, 23, 21, 3, is glowing with heat.
My whole, according to Æsop, made a mouse achieve great success.

CONCEALED SQUARE WORD.

1. The monkey amused the children very much, with his tricks.
2. She is a person whom every one respects.
3. We left them making mud pies.
4. They said one was for me and one for Kate.

RHYMING PUZZLE.

Make a rhymed couplet out of the following sentence. No words or letters are to be added or taken away:—
Little Johnny wanted to see the dancing bears, but said it would cost him a dime.

CROSS WORD.

My first is in orange but not in plum,
My next is in finger but not in thumb,
My third is in harness but not in trace,
My fourth is in ginger but not in mace,
My fifth is in father but not in sire,
My sixth is in anger but not in ire,
My seventh is in monstache, but not in curls,
My whole is a fabric worn by girls.

METAGRAM.

In a word of five letters,—a flower-bed—may be found (1) an animal, (2) a fish, (3) a vegetable, (4) a fruit, (5) a kind of cabbage, (6) a portion of land, (7, 8) two articles of clothing, (9) a fabric, (10) part of an animal, (11, 12) two things an animal may do and (13, 14, 15, 16, 17), five other verbs.

HIDDEN ANIMALS.

1. Who found it? I, Gerald Howland.
2. Give me what you wish, reward me as you choose,
3. Did I cause you to stumble? O! pardon me, I pray.
4. Listen to my prayer, Madam, O let me entreat you!
5. Then came the storm, a stiff north-easter!
6. It was a perilous journey.
7. That night a pirate chased us.
8. I shall be a very thankful man when I reach home.

TRANSITIONS.

(Change only one letter at a time, without altering its position—*e. g.*: Change boot to shoe in four moves: Boot, blot, slot, shot, shoe.

1. Change bark to bite, in four moves.
2. Change soar to drop, in six moves.
3. Change pork to veal, in five moves.
4. Change curd to whey, in nine moves.
5. Change leaf to vine, in eight moves.
6. Change rail to road, in six moves.

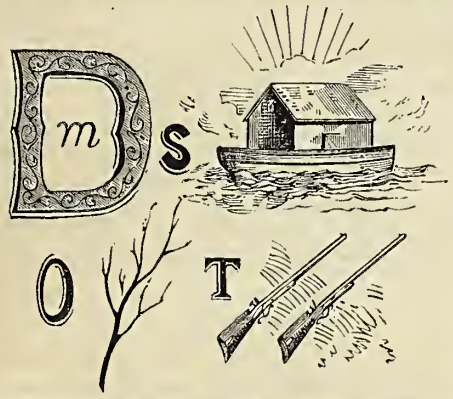
HALF SQUARE.

1. An inventor. 2. Junction. 9. A legal claim. 4. A weight. 5. A preposition. 6. Part of New York.

EDWARD GAY.

ADDITIONS AND TRANSPOSITIONS.

1. Add a letter to material for lighting a fire, transpose and make something we often do not like to take.
2. Add a letter to a seat for babies, transpose into a precious stone.
3. Add a letter to a certain time of day, transpose into a vegetable.
4. Add a letter to an animal, transpose into a weapon.



Illustrated Rebus No. 490. — Thonghtful words for all to consider.

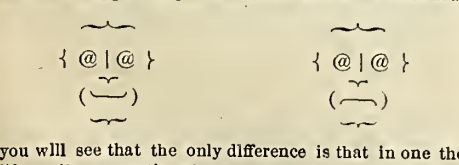
Answers to Puzzles in the March Number.

ADDITIONS AND TRANSPOSITIONS.—1. Trace + p. carpet. 2. Coat + r. actor. 3. Quaint + e. antique. 4. Pear + c. caper. 5. Pair + l; April.

WORD BUILDING.—Lie—veil, olive, violet. 2. Gas—sage, stage, grates, strange. 3. Cut—curt, cruet, curate. 4. One—cone. ocean, canoes. 5. Hat—thaw, wheat, wreath, weather. 6. Mit—mite, mitre, hermit. 7. Cap—chap, peach, chapel, chaplet. 8. Fy—fay, fray, fairy, acrify.

Corners Up.....Corners Down.

Did you ever think how little variation in a single feature is required to change the whole expression of one's countenance? Here is a fair illustration made by a few bits of type. If you study the two faces outlined,



you will see that the only difference is that in one the "brace" representing the mouth is turned *upward*, and in the other *downward*. Yet the left-hand face is cheerful and pleasant, while the other is cross and growling. It all depends upon whether the "corners of the mouth" are turned up or down. Every one can see living illustrations of this difference all around him—among little people and grown ones. Some are almost always cheerful; they make the best of things; they look for and see the good points in their companions; if disappointed in not receiving what they expected, they make the best of it, and try to discover some good to come out of apparent evil. Probably their parents early taught them to yield to necessary restraint cheerfully, not petulantly; not to get angry and go about ponting for an honr. They will go through life so, making all others around them happy by their own sunny cheerfulness. *They keep the corners of their mouths always turned* UP. The philosophers call such people "Optimists."....Then we see others who are almost always in a growling mood. They are constantly suspecting other people of bad motives, and looking for flaws and errors in those aronnd them—something to find fault with—and are happiest when they can do so. They live in a perpetual growl, except when with some particular chosen friends. If they grow up to be employers their employees must always be in a state of abject submission—always on the watch lest they get scolded, and do not give a faithful, cheerful, loving service. Such people are "Pessimists," looking upon most things and events as bad. They fretted and were allowed to fret, to be petulant, in childhood when one's habits of life are forming. *The corners of their mouths are almost always turned* DOWN. We wish our young friends would think about this. Suppose each of you keep a little account, and see how many minutes and how many hours in one day the corners are turned UP, and how many DOWN. It will be a capital lesson to learn.

A Few Things About Italy.

It is a very good thing for boys and girls and young people to take some country and get fixed in their minds a few general ideas, so that they will come up quickly whenever the name of the country is mentioned. Let us study Italy now. With your pencils make a drawing of it from your school or other map. See how nearly it is shaped like a boot. The Alps mountains run along its north side, and the Appenines run down through it. Most of its northern part is a great level plain, the Plains of Lombardy. We have been at places on this where, as far as we could see every way, the ground was as level as a board. Rome stands on a broad flat country running far along the shore of the Mediterranean sea.—THE SIZE of Italy is 114,409 square miles. It would take 2¾ Italys to equal the United States, without Alaska. Or Italy is as large as New York and New England, leaving out nearly half the State of Connecticut; or about the size of Nevada.—THE POPULATION of Italy in 1872 was 26,801,154, and is now probably about 28,000,000, or four-seventhe that of the United States. Turin city has about a million inhabitants (972,986 in 1872). A new census being taken this year gives other leading cities thus:—Naples, 480,334 (nearly up to our Chicago); Milan, 321,000 (nearly up to our Baltimore, Md.); ROME, 300,292; Palermo, 244,955 (half way between San Francisco and Cincinnati); Genoa, 179,491 (nineteen thousand more than Cleveland, Ohio); Florence, 168,000; Venice, 130,698 (six thousand less than Newark, N. J.); Bologna, 122,884 (about the same as Louisville, Ky); Messina, 120,000 (same as Jersey City, N. J.); Catania, 101,000 (not quite up to Providence, R. I.); Leghorn, 97,615 (seven thousand more than Albany, N.Y.); Ferrara, 77,008 (between Indianapolis, Ind., and Allegheny City, Pa.); Padua, 72,174; Veroua, 68,741; Lucca, 68,116; Allessandria, 62,634 (nearly same as New Haven, Conn.); Brescia (60,630, (like Lowell, Mass.); Bari, 60,575; Ravenna, 60,306. Find these cities on your map of Italy. You will perhaps be surprised to notice that the larger part of "sunny Italy" is directly east of New England. Naples is about six miles further north than New York City; and Rome, in central Italy, is almost directly east of Boston, Mass.

The School Children.—Six Problems for Boys and Girls.—In the new census figures, the numbers reported as of "legal school age" in the United States and Territories is 15,307,109.—(This age in California is from 5 to 17 years old; in Connecticut, 4 to 16; in Georgia and Louisiana, 6 to 18; in New Jersey, 5 to 18; in Rhode Island, 5 to 15; in South Carolina, 6 to 16; in Texas, 8 to 14; in most, if not all the other States, it is 5 to 20 or 21).

1.—Suppose all these 15,307,109 were to stand in a row and join hands, allowing each one to occupy 4 feet in the row, how many miles long would the row be?

2.—If we call the distance from the Atlantic to the Pacific Ocean 3,500 miles, how many full rows of school children would there be across the continent, and what part of another row?

3.—Suppose that each one has a spelling book, costing 10 cents; a reading book, costing 30 cents; a slate, costing 20 cents; slate and lead pencils, costing 5 cents; pens, ink, and writing books, costing 30 cents a year; how much would all these cost for the whole?

4.—If each boy's coat costs, on the average, $6; his pants, $4; his vest, $2; his shoes, $1.75; his socks, 60 cents; his cap, $1.25; his "tippet," 20 cents; his shirts, $1.20; his under garments, $1.05; his over-coat, $8; and suppose the girls' outfits to cost the same as the boys: What would be the total cost of clothing for all?

5.—How many farms of 100 acres each would this clothing buy, at $50 an acre?

6.—If each of these 15,307,109 children and young people lose, on an average, 15 minutes during the forenoons, and 21 minutes during the afternoons, in listlessness, or thinking of something else besides study, how many years in all will the lost time reckon up. (N.B.—In reckoning the lost time, and in estimating the years, take an average of 35 school weeks in a year, 5 days in a week, and 6 hours a day).

The Answers:—Let all our young friends make out their answers to the above 6 questions, and write them down, and then see how near they come to the answers which will be printed in the next number of the *American Agriculturist*. You need not send the answers to us, unless you wish. If you do, they can be put on a postal card, writing against No. 1 its answer, and so on.

A Good State for Boys and Girls.—According to Senator Logan's speech in the U. S. Senate, March 16, California goes ahead of all other States in the amount raised by taxation per scholar for public schools, viz., $18.06 for every child of school age in the State. Massachusetts comes next, with $16.86 per scholar. But, come to think of it, California reckons only those children of 5 to 17 years old, while Massachusetts takes in all between 4 or 5 and 20 or 21. This will make quite a difference in the amount for the number actually attending school. But, however that may be, California's record is a splendid one for a young State. We will not give the names of those States which expend only $1.99 and $2.09 per scholar hoping they'll see Mr. Logan's comparisons and do better.

AN ODDLY-COLORED EASTER EGG.

Peanuts or Ground Peas.

It is not probable that Peanut culture can be made profitable north of Virginia, though a few may be grown as a curiosity almost anywhere. Children who are fond of peanuts, will be much interested in seeing them grow, and in raising a few for themselves, even if they do not turn out to be of the best kind, and a patch may well find a place in the garden. A light sandy soil, especially one that has been manured for a previous crop is best, and as in field culture, lime or superphosphate are found the best fertilizers, these, if at hand, may be used in the garden. Make the hills about 3 feet apart each way, and plant four or five seeds, shelled, in each hill. Recollect that *baked* peanuts can not be raised in the garden, and that it is necessary to get *raw* seed of the last year. Cover the seed about 2 inches deep, and when the plants are well up, thin out all but two of the strongest, and let them run as they will, keeping clear of weeds. It will be interesting to the young people to see how, after the parts of the flower fall away, the young pod is actually pushed into the ground by the lengthening of the stem. Each little pod is thus actually buried by the plant, and when fairly under-ground, it grows, and in time reaches its full size, becoming a regular peanut. Of course the first frosts will put an end to their growth, when the vines, with their attached nuts, may be lifted with a fork, and allowed to dry a while in the sun. Afterwards the peanuts may be picked off. If in northern localities most of the pods are "pops," *i. e.*, have nothing within them, never mind, as they have afforded an opportunity for watching a very curious plant. Those who ask about the peanut as a field crop, are referred to an article in the Report of the U. S. Dep't. of Agriculture for 1868, where the experience of a successful Virginia cultivator is given in full.

"What Makes the Ground Crack in Freezing?"

This is a question sent by "T.D.A.," Blair Co., Pa. If my young friend should fill a bottle with water, and leave it out on a cold night, he would find the water frozen in the morning, and the bottle broken. It is one of the most important facts in nature, that water, in changing from the liquid to the solid state, that is in becoming ice, expands to *one ninth* of its former bulk. The power exerted in doing this is immense, sufficient even to burst strong iron vessels. Suppose that instead of a bottle of water, as mentioned above, you were to expose a lot of glass tubes of the size of straws and filled with water. If these tubes, some dozens of them, were tied together and placed where the water would freeze, there would be a curious mass of broken glass and ice. We well know that the earth, or "ground," as "T. D. A.," has it, is very far from solid. We can squeeze it up in the hand to form a compact mass. The ground is full of spaces between its particles, which are usually filled with air. If these spaces are filled with water, and it freezes, what a pushing there would be! It is this freezing of the water in the soil that causes the cracks in the first place; after the little films and layers of ice in the soil melt, the particles of soil that have been pushed aside can not get back to their former place, and cracks are left. The cracking of the soil in this manner, which we can see, is only a part of what goes on every winter. Upon the face of even the hardest rocks, there are little cracks and crevices into which water can find its way; when this water freezes, little bits of the rock are pushed off, and are added to the soil. By far the greater part of our soil is made up of very small bits of rock. When the soil freezes, not only are cracks made in it, but the little bits of rock of which it is made up, are cracked and broken still smaller; this division among the little rock particles, goes on year after year, until what was once the great rock, becomes the finest imaginable powder, to be acted upon by the water in the soil, and help feed the plants. So useful is this freezing of the water in the soil, that many gardeners, in the fall, throw up the earth in ridges, the more thoroughly to expose it to the frost. As a gardener once said to me: "it will make my poor soil as fine as silk."

THE DOCTOR.

DAISY ON HER WAY FROM SCHOOL.

Daisy and the School-House Key.

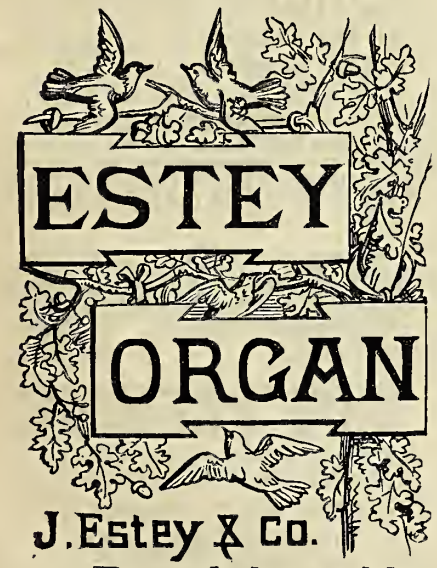
There was a new school-house at Osage and a new teacher. The house, standing on a side road, had windows so high from the floor that no idle scholar was tempted to look out at a passing hay-cart. Miss Gold, the teacher, was kind and strict, small and prim, and though afraid of cows and bugs and traups, she easily controlled the naughtiest child that ever sulked or stamped, and her courage thus lay in the right direction. So when Peter Brown was very bad on this particular Friday, she punished him fearlessly, and after allowing him an hour for reflection, sent him home.

That same afternoon, our Daisy, of the picture, was going through the fields, when she heard her name called, and stopping, Peter popped his head up from the bushes, and nodded in a mysterious way. Peter told her at once that she could do the teacher a good turn, if she would promise never, never to tell that she had the hint from him. He so evidently meant what he said, that she gave him the promise readily, hoping in her good heart that he was at last sorry for always being so dreadful a boy. Daisy, the sweetest, the truest, and most faithful little soul that ever sat behind a desk, could not suspect the piece of malice that Peter, with a grin of delight, then confided to her. Waiting until Miss Gold was quite alone and busy at her writing-desk, he softly turned the key in the lock, and fastened her in the school-room. For over an hour, now, she had been locked up, shaking the door and calling from the window, but no one had passed by, and no one but Peter was near enough to hear her. "And now she knows how *she* likes it!" exclaimed Peter. Daisy's first act was to let Miss Gold know relief was at hand; her next, to find some one to get the door open, and by that time the news was well spread. Some thought it a good joke, but others felt that it was no joke at all to have in the village a character daring such lawlessness. Miss Gold had quite her own feelings on the subject, and when the school assembled Monday morning, she called each scholar by name, and asked if he or she knew anything of the matter. All said "No," except Daisy, who answered "Yes." But she would say nothing further than, "If you please, I can't tell."—"I am sure," said Miss Gold, "we none of us believe Daisy guilty; but as she will not tell what she knows, and so grave an offence cannot be passed over, she must be punished instead of the real offender. I hope," concluded Miss Gold, "if the real offender is in this room, he or she will feel the shame of letting an innocent person suffer, and will prevent it." But no one responded, and the medal was taken from Daisy's neck, and she was suspended from the school until Miss Gold should consider what was best to do further. No one but Daisy knew how hard it was to truthfully keep her promise. With downcast countenance, she walked quietly out of the silent room, carrying her slate and the flowers she had picked that morning, but had not given to Miss Gold. She stopped and looked wistfully, half hoping to see Peter running to call her back. But, though no Peter came, his grandmother, lame Mrs. Brown, appeared, hobbling up the road. Daisy's heart was heavy, yet she was half relieved by the sight of Mrs. Brown, whom she had often heard say, "no one ever did anything for *me*," that she fell into sympathy with the grandmother of so bad a boy as Peter. So she ran up, and, holding out her flowers, "Mrs. Brown," she said, "I would like to give these to you."—The lady stared at her, almost bewildered, and asked, "What do you want?"—"I would like you to take them, because I'm sorry nobody does anything for you," said Daisy.—"Well, well," said the old lady, less sharply, "you're a queer child," and she took the flowers, with no further thanks. But as she was going off, she stopped again to ask why Daisy was not in school. When she heard why, Mrs. Brown muttered to herself, looked at the flowers and at Daisy, and, finally bidding her wait, went off to the cottage. When she came back, she held a key in her hand, and closing Daisy's fingers over it, said: "There, if you want to do something for me, take that to your teacher, and tell her Mrs. Brown said she found it in Peter's trouser's pocket." Daisy did so, and the whole school rose and shouted with joy. And Peter? Why, he said he was very much obliged to his grandmother, for he was growing more wretched every moment, and must have confessed some time." But the most wonderful thing of all is, that, before the end of that term, the three best friends in the school were the new teacher, the boy that locked her in, and little Daisy, who brought back the school-house key.

GEORGE ADAMS.

THE IODINE TRICK.

It is astonishing to what peculiar methods people will sometimes resort to endeavor to advance their own and injure others' interests. One of the latest and most unfair expedients is that of certain manufacturers of baking powders, who are endeavoring to prejudice consumers against all other preparations than their own by exhibiting from house to house a test purporting to show the quality of various powders. The facts are, this so-called test, which we are told simply consists in adding a little iodine to a sample, can in no way reveal the true value of a baking powder, and is only calculated to deceive and prejudice the minds of the ignorant and unwary. Some powders are injurious, but this can only appear by an analysis. The true value of a baking powder consists in the amount of leavening gas which is given off when heat and moisture are added to the flour, and it is only the chemist, with the aid of chemical appliances, who can determine the volume of gas which any powder can evolve. We will venture to say that there is not an article prepared for food that might not be manipulated by chemical tests to prove that something was wrong about it, and when a person goes into a kitchen, or before a house-keeper, who is not to be presumed to understand chemical relations, and performs an experiment of even the simplest character, it is not difficult to impress one that something awful is the matter. As to baking powders, we could suggest a dozen tests that would be as ridiculous in giving a fair idea of their relative merits to an uninstructed mind as the one here mentioned. The truth is, that the best test to make of a baking powder is to try it in making bread, and see which makes the most and best. To this practical test all of the established brands of powders have been put, and house-keepers have very generally made up their minds which they prefer, and the iodine testers will find ultimately that households that have for years used a favorite brand will not be apt to make a change on the test proposed.—*American Grocer.*



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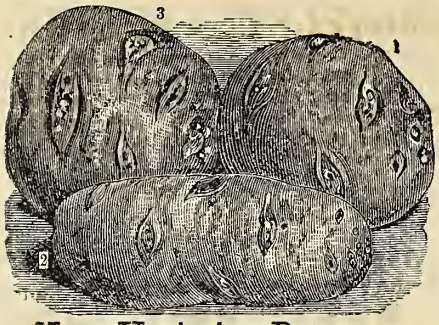

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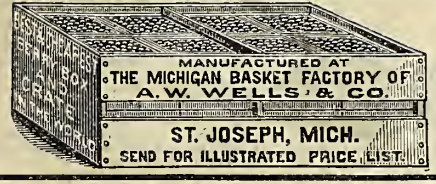

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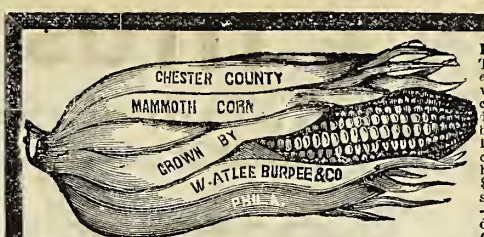

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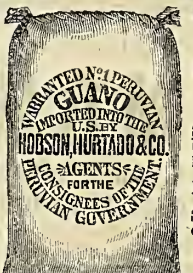

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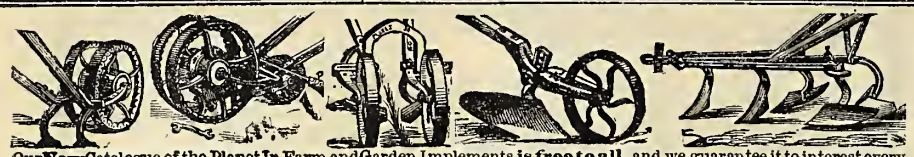

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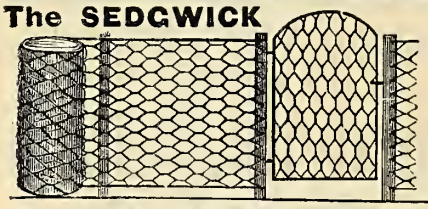

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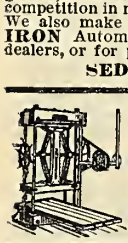

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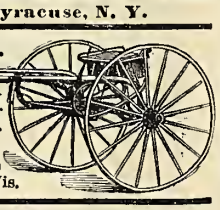

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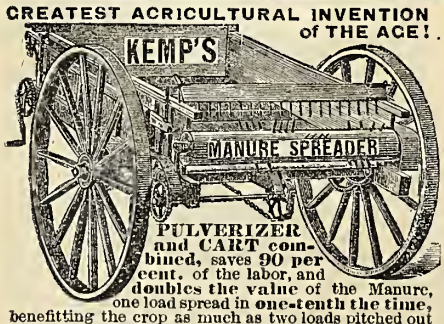

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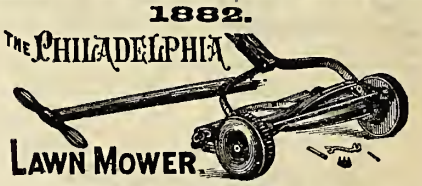

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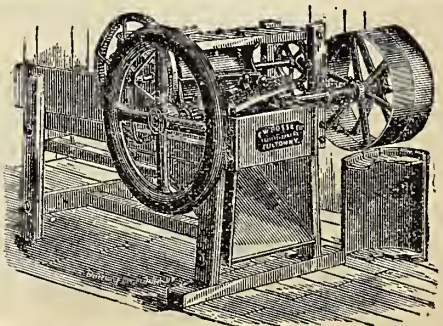

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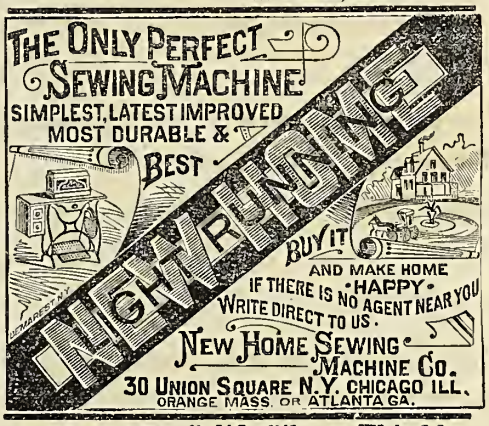

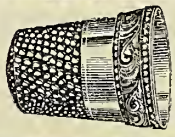

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containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in a German Edition. It is the chief and best German Journal of its kind issued in this country. Our friends can do good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language. Those who employ Germans will find that Edition a most *useful* and acceptable present.

Bound Copies of Volume 40 (1881) are now ready. They are neatly bound in our uniform style, cloth, with gilt backs. Price at the office, $2. If sent by mail $2.30. We can usually supply, at the same rate, any of the 25 previous volumes, or from volume 16 to 40 inclusive. Any *ten* or more volumes, in one lot, will be supplied at the office for $1.75 each; or be forwarded by mail or express, carriage prepaid, for $2 each.

Terms to New South Wales, New Zealand, Australia, Europe, etc.—To several inquirers. Under the latest revision of the Postal Union Regulations the price of the *American Agriculturist* (either English or German edition), including postage *prepaid* through, will be covered by 7 shillings sterling per annum. This applies to the above countries, and to all others embraced in the General Postal Union. The simplest mode of remittance is by Postal Money Orders, payable in London, to the order of Orange Judd Company. These can be readily cashed in N. Y. City at a slight discount, which the publishers will cheerfully pay. For Club rates (postage included), see page 230, and reckon the shilling sterling at 24 cents.

Read the Advertising Columns.—Letters are daily received by the Editors, asking where pigs, fowls, seeds, fertilizers, machinery, etc., can be procured. We consider all the information of this kind that is given in the advertising pages sufficient, if those needing anything will only look there; we can not find room to repeat what is already plainly told elsewhere. Every page of the *American Agriculturist*, including the covers, is interesting reading, and should all be carefully examined every month. In addition to looking after what one may want, the reading of what others have to say, in offering their wares, etc., starts up some new idea in the mind of the reader.—When writing to any advertiser, always tell him in what paper his advertisement was seen.

Wise too Late.—A correspondent in a New England State listened to the representations of a tree peddler as to an apple which would come into bearing sooner, sell better and keep longer than the Baldwin, and ordered quite a lot of the trees. He has since heard that the variety is inferior to the Baldwin, and writes to ask us about countermanding the order. If an order has been unconditionally given, it would seem that our friend is obliged to take the trees, unless he can show that he was induced to order them by false representations. How he can prove this, when the variety is not recorded in the pomological works, we are unable to see. The inquiries as to the apple should have been made *before* giving the order. We have often stated that new and especially desirable fruits are not introduced by tree peddlers. Those who order fruits upon the representations of these, repent doing so sooner or later.

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The Publishers of the *American Agriculturist* have arranged for a very fine, SPECIAL EDITION, expressly for their Readers, on such terms as will place it within reach of almost *every* Family, as follows:

Any subscriber sending $5.80, will be entitled to receive the American Agriculturist for one year, and, in addition, a copy of the Gallery.*

(This will make the Gallery of Paintings practically cost only $4.30, instead of the regular price of $10, which it is richly worth.)

A FREE COPY.

Any person sending *seven* subscriptions to the *American Agriculturist,* at the regular price ($1.50 a year), will be PRESENTED with a copy of the GALLERY.*

☞All the above applies only to subscriptions received after March 20, 1882, and until further notice.

*☞ The Gallery of Paintings will be delivered at the Office; OR will be forwarded by express, the carriage to be paid by recipient; OR, for very distant points, will be carefully packed and sent by mail, on receipt of 70 Cents extra for postage.

To make Grafting Wax.—We have answered a number by mail, but so many inquiries continue to come, that we repeat the recipe given in former years. Rosin, Bees Wax, and Tallow, are the essentials. Some use equal parts by weight of these; others prefer, as warm weather approaches, more Rosin and less Tallow. A good recipe is Rosin 2 lbs., Bees Wax one lb. and a quarter, Tallow 12 ounces. These should be melted well together over a gentle fire, and stirred as the mixture cools. It is most conveniently used upon strips of cloth. Any old calico or muslin that will tear readily, may be torn into strips 2 inches wide, made into balls and soaked in the melted wax, until thoroughly saturated. We prefer to roll the cloth upon a short stick, to afford a handle. If paper is to be used, the warm Wax is spread with a brush upon one side of this Manilla paper. Some grafters prefer a wax made with raw Linseed-oil in place of the tallow, using a pint of oil instead of a pound of tallow.

Curing Sheep and Other Skins, with the Wool or Fur on.—"H. G. S.," Simcoe, Ont., thinks that many farmers would tan sheep and other skins, with the hair or wool on, if they were told how. They are very convenient for sleighs, wagons, house rugs, and many other purposes. We give the following from a reliable source, remarking that it is essentially the same that we have found in use by the trappers and hunters in the "wilderness." All fatty and fleshy matter should first be removed from the skin, and with sheep skins the wool should be washed clean with soft-soap and water, and the suds be thoroughly rinsed out. For each skin take 4 ounces of Salt, 4 ounces of Alum, and half an ounce of Borax; dissolve these in one quart of hot water, and when cool enough for the hand to bear, stir in sufficient rye meal to make a thick paste. This paste is to be spread thoroughly over every part of the flesh side of the skin, which is then to be folded together lengthwise, wool-side out, and left for two weeks in an airy place. Then remove the paste, wash and dry the skin. When nearly dry, it must be worked and pulled, and scraped with a blunt knife made for the purpose, shaped like a chopping knife, or with a piece of hard-wood worked to a sharp edge. The more the skin is worked and scraped as it dries, the more pliable it will be. Other skins can be similarly tanned and keep the fur on.

Worms in Beet Leaves.—"H. B. S.," Clinton, N. Y., finds that his beet leaves of late contain small white worms, varying from $^1/_{16}$ to $\frac{1}{4}$ inch in length, which at first can only be discovered by holding the leaf up to the light, but later they cause the leaves to wither. He finds them not only in the common beet leaves, but also in those of Swiss Chard, and asks if it is an old pest, or a new comer. We judge from the description, that this must be the Beet Fly of Europe, which has within a few years proved troublesome in England. The perfect insect (*Anthomyia betæ.* Curtis), is own brother to the Onion Fly, which is often so destructive to young onions. It is a two-winged insect, not so large as the common House-fly, which lays its eggs in patches on the underside of the leaves. The maggots, as soon as hatched, enter the leaf and rapidly devour the softer portions. In about a month they enter the ground, and in 10 days a second brood comes out to continue the mischief. This last brood passes the winter in the pupa state in the ground, according to English authorities. One writer suggests superphospbate as the best remedy, but this can have no other effect than to stimulate the growth of the plant, and enable it to endure the attacks. We are not sure that the insect has been observed in this country heretofore.

Shading a Conservatory or Green-house.—"E. H. A.," has a conservatory connected with his house, and does not wish to whitewash the glass for the purpose of shading the plants. Then a screen of some kind must be used. One may be made of light slats of wood, an inch wide, fastened together by cords so far apart as the width of the slats. This may be in sections of ten feet wide, and made to roll up in dull weather. An awning of some loosely woven fabric, may be used, also contrived to roll up when not needed. Shades of these kinds should be upon the outside, and so arranged that they may be fastened down in heavy winds.

Ignorance and Crime.—An official report from 63 rural "Departments" of France, states that of 3,354 criminals arrested, only 512 could read and write well; 1,480 could neither read nor write at all, and 1,362 could only do so imperfectly. In New York City there is 1 crime to every 3 persons among the illiterate, and only 1 crime to every 27 among those who can read and write. The figures for the State show a far greater difference in favor of education. In Massachusetts 1 in 20 of the ignorant commit crime, and only 1 in 126 of those who can read and write.

Spotted "Clover" Leaves.—"C. R. B.," Portsmouth, Va., sends leaves from a patch of White Clover, with a blackish spot on each leaflet. These leaves probably do not belong to the clover at all, but to a nearly related plant, the "Spotted Medick," or "Nonsuch" (*Medicago lupulina*), which is very common. It will be found to have yellow flowers, instead of the white ones of the clover. It does no harm.

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A fine opportunity for LADIES, for TEACHERS (Male and Female), for Students; for Young People; for Canvassers Everywhere.

The Publishers desire an Agent or Canvasser in every town in the country (where one is not already at work), to introduce the **Gallery of Paintings,** and the *American Agriculturist.* Every family called upon will want a copy as soon as they examine it. It speaks for itself, requiring no gift of speech on the part of the Canvasser.

Any active Lady or Gentleman, young or old, should readily make **$10 a day.**

Terms made known on application; but any one can go right to profitable work, and save time by sending at once $5 for an Outfit, which includes the Gallery of Paintings. Send statement as to good character of the Applicant from the Postmaster or other prominent person.

This is an opportunity that is seldom offered.

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We again call the attention of all our Readers to the

ILLUSTRATED PREMIUM LIST.

Containing Thirty-two Pages, with a large number of Engravings, describing 443 Fine Premiums, offered to our subscribers.—This List was made up in October last and the offer holds good

To the End of June.

☞Every one who has not received a copy, or who has lost or mislaid the copy received, is invited to send his address for one, by Postal Card or otherwise.—Also the address of any friend who will be interested in receiving a copy. ☞A copy will be mailed post-paid to all desiring one.

Catalogues Received.

According to custom this will be our last general list of spring catalogues, though we may notice some of special interest. The autumn catalogues will be acknowledged in September and later, and those desiring recognition in the list should send their catalogues as soon as ready. The tendency to combine two distinct branches of business—as seeds and greenhouse plants—is so general, that as a rule we can only spare space to notice catalogues under what appears to be the leading business. We make these notices of catalognes, not so much for the benefit of those who issue them, as for the general information of our readers who so frequently write to ask where they can get this or that. *In sending to any of these parties for their catalogues, our readers may confer a double favor by referring to their announcement in this journal.*

SEEDSMEN.

C. E. ALLEN, Brattleboro, Vt.—A catalogue which, besides seeds, is so full of flowering and small fruit plants, that we are doubtful where to place it.

A. BUSCH, Zewitz, Pomerania.—A special potato catalogue offering 200 varieties including the later American sorts.

SAMUEL N. COX, St. Joseph, Mo.—Full and neat, with a useful list of common, and corresponding botanical, names.

EVERETT & GLEASON, No. 34 South Market St., Boston.—Mr. Gleason formerly had charge of the seed business of R. H. Allen & Co., New York, and the neatness and compactness that marked their catalogues are found in his own.

J. C. EVERITT, Ontario, La Grange Co., Ind.—Besides the standard vegetable seeds makes a specialty of potatoes, of which he offers a wonderful assortment.

H. A. FIELDING, Lowell, Mass.—Besides an illustrated list of garden, field and flower seeds, offer nearly every implement needed on the farm.

HOVEY & Co.. No. 16 South Market St., Boston, Mass.—No one would suspect, from the freshness of the catalogue, that this house is one of the oldest.

BENJ. F. HOOVER, Galesburg, Ill., makes a specialty of seed potatoes, and tells about them.

E. L. MEYER, Hutchinson, Kans., converts a part of his catalogue into a useful almanac.

JOHN R. & A. MURDOCH, Pittsburgh, Pa., besides seeds, have a great variety of plants.

ROBERT C. REEVES, 135 & 137 Water St., N. Y.—Besides vegetable and flower seeds, is very full in farm seeds and implements.

WM. RENNIE, Toronto, Ont., Canada, has a list as varied, and as beautifully illustrated, as if it were issued on this side of the border.

C. R. ROGERS, 113 Market St., Philadelphia.—A very full and well illustrated list, with many specialties.

STEELE BROS. & Co., Toronto, Ont., Canada.—A beautiful list, without and within, and full of everything.

ISAAC F. TILLINGHAST, La Plume Pa., offers "Reliable Seeds at Honest Prices"—and give useful talk about them.

ROBERT VIETOH & SON, New Haven, Conn.—Mr. V. is widely known as a skillful cultivator. His catalogue includes both seeds and plants.

NURSERYMEN AND FLORISTS.

Some of our best known nurserymen are also florists, and we give the few catalogues that come to hand at this late season, under one head.

P. J. BERCKMANS, Augusta, Ga., besides being the largest nurseryman in the Southern States, is also the largest dealer in greenhouse plants, as this catalogue shows.

JOHN S. BURROW, Fishkill, N. Y.—Issues a special illustrated circular of several of Mr. Ricketts' wonderful grapes.

BUSH & SON & MEISSNER, Bushberg, Jefferson Co., Mo.—We have already commended the compactness and the comprehensiveness of the admirable list sent out by this house. It includes every variety worth growing, and many not to be had elsewhere.

E. R. CROSSON, Colorado Springs, Colo.—A full and instructive list of small fruits with several specialties.

JAMES DRAPER, Worcester, Mass.—A general list of fruit and ornamental plants.

ELLIS BROS., Keene, N. H., devote the greater part of their catalogue to greenhouse and bedding plants, but offer the modest potato, and vegetable plants.

THE GOULD NURSERY, Beaver Dam, Wis., offers general fruit and ornamental stock.

HENRY MERRILL, West Newbury, Mass.—Small fruit plants, strawberries a specialty, and sensibly advises his customers to take the agricultural papers.

E. S. MILLER, Wading River (L. I.), N. Y.—An illustrated list of the leading bedding plants, with all the novelties.

WILLIAM H. MOON, Morrisville, Pa.—Besides the usual fruits, is very full in ornamental trees and shrubs, and well illustrated.

E. Y. TEAS, Dunrieth, Ind.—General orchard and small fruits, with novelties; he also brings into prominence several native plants, including that lovely shrub, *Clethra alnifolia*, for which we here thank him.

HENRY WILBUR, Montgomery, Mich., publishes "Hints on Fruit Culture," and very useful hints too; at the end he modestly gives a list of prices.

WM. C. WILSON, No. 45 West 14th St., N. Y. City, and Astoria (L. I.), N. Y.—If there is anything in the way of a plant, whether ornamental or fruit-bearing, not included in this compendious catalogue, we are sure that it must be a rarity.

MISCELLANEOUS.

Including Machinery, Implements, Live Stock, and whatever is not included under the foregoing heads.

BAUSCH & LOMB OPTICAL COMPANY, Rochester, N. Y., and 37 Maiden Lane, N. Y. City.—This firm, well known to the readers of the *American Agriculturist*, issue a catalogue of their more costly optical instruments of various kinds.

W. S. BLUNT, 94 Beekman St., N. Y.—A "Supplementary Catalogue" giving the improvements that have been made in, and accessories contrived for, his excellent pumps.

A. B. COHU, No. 197 Water St., N. Y.—This catalogue for 1882, after devoting over 60 large pages to his own wares, adds about 40 pages describing kindred articles made by others. It is a wonderful production, and might be accented as an exponent of mechanics as applied to agriculture in 1882.

DOTY'S WASHERS.—Our old friend Doty now sends his catalogues from Chicago, describing "Improved Washers and Starchers." The trouble with Doty is, he is always improving on himself.

D. M. DEWEY, Rochester N. Y.—Besides colored plates of fruits and flowers, offers in his catalogue almost everything that a nurseryman can want.

H. B. GRIFFING, No. 70 Cortlandt St., N. Y.—Proprietor of the "Metropolitan Agricultural Works," in a copiously illustrated pamphlet shows the wonderful variety of implements and machines they produce.

HERCULES WIND ENGINE CO., No. 17 Moore St., New York.—This "Wind Engine" which essentially differs from ordinary wind-mills, is fully explained and illustrated, with all its accessories, in a neat pamphlet.

CHARLES D. LAKE, Baltimore, Md., in a neat treatise illustrates all sorts of hives for bees to store honey in, as well as plants from which they may get it.

ALFRED LEIDA, Delaware Station, N. J.—Describes Plymouth Rocks, his special breed of fowls.

MAPES FORMULA AND GUANO COMPANY, 158 Front St., N. Y.—This company believes in printer's ink, and publishes interesting pamphlets. They are on the right track, *i. e.*, having every article, just what it purports to be.

MAYWOOD CO., No. 58 La Salle St., Chicago, Ill.—All the parties interested in the "Chicago Screw Pulverizer," and "Scraper and Ditcher," are consolidated under the above title. They publish a circular of about 75 pages, which tells all about these effective implements.

POWELL BROTHERS, Springboro, Crawford Co., Pa., claim to have "the choicest collection of live stock in the world." That they have fine Clydesdale horses, has long been known. In a circular of exquisite neatness, they offer trotting stock and cattle, to make their claim good.

RUSSELL & Co., Massillon, Ohio, in a large and beautiful catalogue, illustrate their Threshing Machines and Sawmills, operated by their horse-powers, and by their various steam engines.

THOMAS J. WARD, St. Mary's, Vigo Co., Ind.—Sends his price lists for poultry, and adds fruit and ornamental trees.

GARDNER B. WEEKS, Rochester, N. Y., well-known as a dealer in dairy implements, issues a pamphlet on the "Grappling Hay Fork and Railway Hay Conveyor." Every part is illustrated to the minutest detail, as all such implements should be.

Sowing Locust-Tree Seeds.—"G. B.," Cecilton, Md., writes us as follows concerning the Locust:—"There is not a more useful wood, or one of quicker growth. A tree on every square of four or five feet would be of far greater value than any grain crop. It can be cut every 12 or 15 years, and will renew itself. I have planted several hundred (all I could get), and have some seed saved from trees about the place. I do not know how to start Locust, which are very slow to vegetate."—Our correspondent is quite right with respect to the value of the Locust. The fact that in some years the borer has been very destructive, has generally deterred people from cultivating this tree. But the insect is not always abundant, and when the trees are near together, enough will escape injury to make the planting profitable. It will grow on very poor soil, which will yearly be improved by the fallen leaves. Pour scalding water over the seeds, and allow them to stand in a covered vessel until cold, then sow at once. These remarks apply to the *Robinia*, which in different parts of the country is known as the Yellow, White, and Black Locust, and not to the Honey Locust, a very different tree. We believe most seed dealers can supply the seed.

For MAY.

SPECIAL.

(*N. B.—The following offers hold good from the reception of this paper, up to May* 31, *next*):

Any person sending a subscription to the *American Agriculturist* for one year, at the regular rate ($1.50), will be presented with **any one** of the following, delivered by mail, post-paid, to any part of the United States or Territories (the Pot-grown Plants excepted):

No. 1.—Any one of the One Hundred Good Books described on pages 124 and 125 of the March number of the *American Agriculturist.*

OR,

No. 2.—The American Popular Dictionary, described on page 124 of March *American Agriculturist.*

OR,

No. 3.—24 Bidwell Strawberry Plants, post-paid; OR, 15 Pot-grown Bidwell Strawberry Plants, by express, unpaid, as described in March *American Agriculturist,* **page 124.**

OR,

No. 4. — The "American Agriculturist MICROSCOPE," described on page 173 of April *American Agriculturist.*

What Makes a "Subscriber?"—"J. F. B.," Montrose, Pa., writes that the first three months of a paper devoted to fruit culture were received by him, and he now is addressed as a "Delinquent Subscriber," and asked to "pay up." He did not order the paper and supposed these numbers were sent as sample copies. It has been held that taking papers regularly from the Post Office is presumptive evidence that the one so doing is liable as a subscriber. If continued for a considerable period, this is generally an equitable construction. But it would be very unjust to compel one to pay for a few copies received without having given any order, and examining them as invited to do so by the fact of their being sent. In this case, as reported by Mr. J. F. B. he can not be blamed for considering it "a low underhanded method of extorting money from innocent persons."—The invariable rule with the *American Agriculturist* for five and twenty years, has been to send out no copies that were not considered paid for, unless in special cases where there was some definite understanding to the contrary. Multitudes send us subscriptions for the paper to be mailed to friends, and sometimes the numbers are returned by the recipient as "not ordered," before the reason for sending them has been understood.

Mulberries for Fruit.—Several inquiries show that there is a renewed interest in this much neglected fruit. Half a century ago Mulberry trees were not rare in old gardens; they were called English, but were originally from Persia, and its fruit is not exceeded in quality by any other kind, though the tree is rather tender in northern localities. When the "Multicaulis" excitement prevailed, many thousands of trees were raised from seed, many of which were allowed to grow up, and among them were some which bore excellent fruit. One of these in the garden of a relative bore delicious fruit of a very pale purple tinge; another originating on the grounds of Charles Downing, at Newburgh, N. Y., has been propagated as "Downing's Everbearing Mulberry," and is the best kind for fruit, as it continues long in bearing, and the fruit is of excellent quality. It is to be had at all the nurseries.

One Hundred Cities.

In examining and comparing sundry figures from the Census Reports now being made up for 1880, and making some calculations, we collected the facts and items below, which will interest many readers of the *American Agriculturist.*—Our country lacked but one of having just One Hundred Cities containing Twenty Thousand Population and upward, and this one only needed 257 to reach the score of thousands, which is now doubtless attained. Finding that many of the reports published in the newspapers disagreed materially, we obtained direct from the Census Bureau the latest official revised figures, from which the items here given are made up. The table below gives the names of the cities with the population of each, in the order of their size.—Their total population ten years before (1870) was only 6,661,905 against 9,101,057 in 1880, an increase of 2,439,152, or 36½ per cent, while the increase in the whole country was only 30 per cent, showing an unhealthful tendency to crowd into, and indeed over-crowd the cities, especially by new comers, as shown below. The largest per cent of increase was made by Denver, Col. (from 4,759 in 1870 to 35,629 in 1880); the next by Bay City, Mich. (7,064 to 20,693). *One* city exceeds a million population; *Four* exceed 500,000; *Ten* exceed 200,000; and *Twenty* exceed 100,000.

Of the total population in these 100 cities in 1880, over 51 per cent (or 4,645,239) were FEMALES, and less than 49 per cent (4,455,818) MALES.—Of the whole, the foreign born numbered 4,872,521, or over 53½ per cent; and the native born, 4,228,533, or under 46½ per cent. This is a remarkable fact. The total foreign population of the United States was, in 1880, only 6,679,943, or about 13 per cent of the whole 50,155,173. Again: Of this total foreign born population 4,872,521, or nearly 73 per cent, are crowded into the 100 cities, leaving only 1,807,419, or 27 per cent of them in all other cities, villages and the country. That is, outside of the 100 cities, 21 out of every 22 were born in this country.

	1880.		1880.
1 New York, N. Y.	1,206,299	51 Oakland, Cal.	34,555
2 Philadelphia, Pa.	847,170	52 Utica, N. Y.	33,914
3 Brooklyn, N. Y.	566,663	53 Portland, Me.	33,810
4 Chicago, Ill.	503,185	54 Memphis, Tenn.	33,592
5 Boston, Mass.	362,839	55 Springfield, Mass.	33,340
6 St. Louis, Mo.	350,518	56 Manchester, N. H.	32,630
7 Baltimore, Md.	332,313	57 Saint Joseph, Mo.	32,431
8 Cincinnati, Ohio	255,139	58 Gr. Rapids, Mich.	32,016
9 San Francisco	233,959	59 Hoboken, N. J.	30,999
10 New Orleans, La.	216,090	60 Harrisburg, Pa.	30,762
11 Cleveland, Ohio	160,146	61 Wheeling, W. Va.	30,737
12 Pittsburg, Pa.	156,389	62 Savannah, Ga.	30,709
13 Buffalo, N. Y.	155,134	63 Omaha, Neb.	30,518
14 Washington, D. C.	147,293	64 Trenton, N. J.	29,910
15 Newark, N. J.	136,508	65 Covington, Ky.	29,720
16 Louisville, Ky.	123,758	66 Evansville, Ind.	29,280
17 Jersey City, N. J.	120,722	67 Peoria, Ill.	29,259
18 Detroit, Mich.	116,340	68 Mobile, Ala.	29,133
19 Milwaukee, Wis.	115,587	69 Elizabeth, N. J.	28,229
20 Providence, R. I.	104,857	70 Erie, Pa.	27,737
21 Albany, N. Y.	90,758	71 Bridgeport, Conn.	27,643
22 Rochester, N. Y.	89,366	72 Salem, Mass.	27,563
23 Alleghany, Pa.	78,682	73 Quincy, Ill.	27,268
24 Indianapolis, Ind.	75,056	74 Fort Wayne, Ind.	26,880
25 Richmond, Va.	63,600	75 N. Bedford, Mass.	26,845
26 New Haven, Ct.	62,882	76 Terre Haute, Ind.	26,042
27 Lowell, Mass.	59,475	77 Lancaster, Pa.	25,769
28 Worcester, Mass.	58,291	78 Somerville, Mass.	24,933
29 Troy, N. Y.	56,747	79 Wilkesbarre, Pa.	23,339
30 Kansas City, Mo.	55,785	80 Des Moines, Iowa	22,408
31 Cambridge, Mass.	52,669	81 Dubuque, Iowa	22,254
32 Syracuse, N. Y.	51,792	82 Galveston, Texas	22,248
33 Columbus, O.	51,647	83 Norfolk, Va.	21,966
34 Paterson, N. J.	51,031	84 Auburn, N. Y.	21,924
35 Toledo, O.	50,137	85 Holyoke, Mass.	21,915
36 Charleston, S. C.	49,984	86 Augusta, Ga.	21,891
37 Fall River, Mass.	48,961	87 Davenport, Iowa	21,831
38 Minneapolis, Minn.	46,887	88 Chelsea, Mass.	21,782
39 Scranton, Pa.	45,850	89 Petersburg, Va.	21,656
40 Nashville, Tenn.	43,350	90 Sacramento, Cal.	21,420
41 Reading, Pa	43,278	91 Taunton, Mass.	21,213
42 Wilmington, Del.	42,478	92 Oswego, N. Y.	21,116
43 Hartford, Conn.	42,015	93 Salt Lake City	20,768
44 Camden, N. J.	41,659	94 Springfield, Ohio	20,730
45 St. Paul, Minn.	41,473	95 Bay City, Mich.	20,693
46 Lawrence, Mass.	39,151	96 San Antonio, Tex.	20,530
47 Dayton, O.	38,678	97 Elmira, N. Y.	20,541
48 Lynn, Mass.	38,274	98 Newport, Ky.	20,433
49 Atlanta, Ga	37,409	99 Po'keepsie, N. Y.	20,207
50 Denver, Col.	35,629	100 Springfield, Ill.	19,743

Total, 9,101,057.—Average, 91,010.

A Boy's "Book Plot."

In another part of this paper it will be seen that the boys in Delaware State are all invited to compete for prizes for the best quarter acre of corn. Several other similar local offers are made. One was announced for Orange County, N. Y., last month (page 145). We propose another plan which can be put in operation all over the country, and we see no objection to letting the boys invite their sisters to join them. It will not hurt them a bit to assist in weeding and watching the growth, but will help put a healthful glow on their cheeks. The plan is this:—

Let every boy of 7 or 8 years old and upward, ask father to let him have just one-quarter of an acre of ready plowed ground, all to himself, and promise to tend it at odd moments. On this ground plant corn, or if corn will not grow well, plant it to beans or something that will do well. Study from the *American Agriculturist,* and inquire from others, what kind of corn for example will grow best. Unless the land is very fertile, see if some waste lots of manure are not left about the barn, or some black earth soaked with water from the yard, or some poultry droppings, cannot be gathered, and some ashes put in the hills with the soil, but not right on the seed. Study all these ways of making the corn grow as thriftily as possible. Any enterprising boy can readily put in and tend such a plot, and not let one weed grow on it, without neglecting his other work.

What will be the result?—It will be very poor land and poor cultivation that will not yield 10 bushels on a quarter acre. We believe most boys will get 20 bushels of good corn, but if the yield be on the average only 16 bushels, and the corn will sell for 40 cents a bushel, it will be worth $6.40; or if it sells for only 25 cents a bushel, it will bring $4.00. Now, there are not less than Two Hundred Thousand boys who read the *American Agriculturist,* and we believe that after leaving out the village and city boys who have no land (though most of the village boys can rent a quarter acre near by to work), there are at least a Hundred Thousand of our boys (those who read this paper) who can carry out the plan *this year.* If they get $5 worth of corn each, this will make *half a million dollars' worth!*

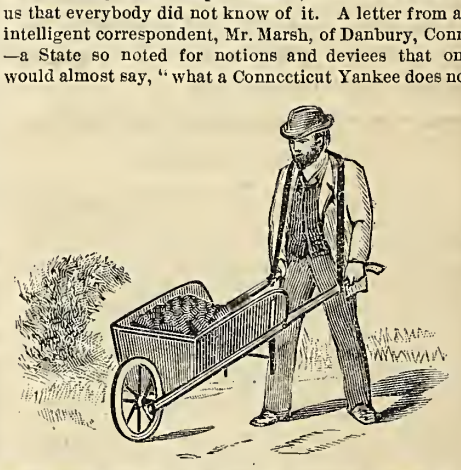
There are a great many useful ways to expend the corn money, that can be adopted, but we suggest the following:—Let this plot of ground be called the "BOOK PLOT," and expend the money obtained in good books. (We will tell by and bye a variety of books we would recommend). We have lived so long and watched so many boys grow up, that we are very sure every boy who does the above, and buys and reads the books, which will be all the more prized because he earns them himself, will be a great deal better man for it; and his chances of success in life in any calling will be largely increased. The fact that he, himself, *plans* the planting, fertilizing, studies the results, etc., will be of untold advantage.

To Make Posts Durable.—J. C. Johnson, Ohio. The "kyanizing" process you inquire about, is not practicable on the ordinary farm. The following is simple and effective: Burn the part of the posts to be set in the ground including the bottom end, just enough to leave a thin layer of charcoal all over the surface, and then dip them in hot tar or asphalt. The charcoal is indestructible by air and moisture; the tar or the asphalt fills the cracks and interstices, and thoroughly protects the interior wood. A barrel of tar or of asphalt is readily obtainable in any large city, costs but little, and will furnish a dip for several hundred posts. The heating can be done in any large iron kettle, with care not to have the material take fire. The charring can be done by building a large fire of waste brushwood and putting on the posts, turning them to prevent too deep burning in one place. Ordinarily the cost of labor and material need not be over 2 to 4 cents a post, while such preparation will three or fourfold their real value. As posts decay soonest just at the ground surface, "between wind and water," as the sailors say, it is best to have the coating extend half a foot above ground, and where looks are of no account, the whole post may be similarly treated, which will make them almost indestructible by decay.

The Cut Worms.—A subscriber in Indiana writes us that the corn in his section was seriously damaged by the "grub-worm" and wants to know how to prevent a repetition of the evil. By "grub-worm" our correspondent evidently refers to what are more accurately known as Cut-worms, of which there are about a dozen different kinds, the larvæ of as many species of moths. As those which attack corn are much alike in their habits, they may be treated as one. Several plans for preventing the depredations of the cut-worm have been proposed. Some of them are applicable only to small fields, and none of them have proved fully successful. As these grubs do not attack the grain, but merely prey upon the stalk, it is evident that soaking the seed in solutions, rolling it in lime, or the use of fertilizers containing materials supposed to be disagreeable to them, will be of no value except in hastening the development of the plants beyond the stage at which these pests prove destructive. The methods which have been found most useful are: giving the land one or two extra plowings (one of them in the fall, if possible), in order to expose the grubs to the attacks of the birds which are their natural enemies. Going over the fields with a pair of wheels which have been fitted with spur-like projections which will make holes three or four inches deep in the soil when the wheels are turned. The worms follow the smooth tracks made by the rims of the wheels, fall into the holes from which they are unable to escape, and in which they are killed by the heat of the sun. A similar method on a smaller scale is used in the garden. A piece of scantling a foot or two long is fitted with a handle. On the lower side of this several pegs are attached to make holes in the soil when the implement is pressed down. In the morning, the same tool may be used to crush the worms that have fallen into, or taken refuge in these holes. Fires built in the fields occasionally on summer evenings, from the middle of June to the last of July, when they are most abundant, will attract and destroy large numbers of the moths which are the parents of the worms. It is important to kill the insect whenever found, in either of its stages of development. In this way the ravages of the individual are checked and the production of multitudes prevented.

About Maps.—How Large is Mexico?—The map makers sometimes give us very erroneous impressions of the size of countries. Our geographies put down our own country on a large scale and spread single States over great folio pages, where they occupy as much space as the whole of Europe, and most foreign countries are inserted towards the end of the book, in small size. We were not a little amused when in Europe to find their maps got up on a similar plan. In a German book of maps, we found even a little Duchy, not so large as Rhode Island, covering more space than was given to the United States of America, and the latter was at the end of the book. But we minify places on our own continent. Mexico, for example, usually occupies a small lower left-hand corner of our maps. But its actual area, which is 743,948 square miles, is almost exactly as large as all of the twenty-five States east of the Mississippi River, leaving out only Illinois and Wisconsin. But the total population of Mexico (9,391,371) is barely twenty five thousand greater than that of the two States of New York and Pennsylvania!

Shoulder-Straps for a Wheelbarrow.—We have long seen in occasional use, and long used a simple arrangement for relieving the hands and arms in carrying loads upon the ordinary wheelbarrow, and in this as with many other simple devices, it did not occur to us that everybody did not know of it. A letter from an intelligent correspondent, Mr. Marsh, of Danbury, Conn.—a State so noted for notions and devices that one would almost say, "what a Connecticut Yankee does not



know about devices is not worth knowing"—says it is new to him, and is so convenient and useful that everybody ought to know of it. And, by the way, we want to say right here, that almost every one of our readers knows of some labor-saving, labor-helping devices that not half of the world knows anything about, and we earnestly invite all to send us descriptions of such things, however simple and common they may seem to themselves. Send rough pencil or pen sketches when practicable. With our artists and engravers we can usually make them plain to the eye and understanding. Please do this to day, and next month, and all along through this year and the next.—But to the case in hand. A strap, of webbing or of leather, or of any strong fabric (we have seen bed-ticking used) of suitable length, has loops in the two ends to slip over the wheelbarrow handles. This is thrown over the shoulders, and to them may be transferred a part or the whole of the weight. It can be provided in a few minutes, and will be found of decided advantage. The engraving explains the arrangement.—A buckle a foot or more from one end of the strap would allow the length to be changed as desired, so as to be "short enough for a boy, or long enough for a long man." The wheelbarrow is one of the handiest implements on the farm, and no place should be without one.

Separating Honey.—A correspondent, who has not hives enough to warrant the purchase of an "Extractor" asks how he can separate the honey from the comb without one. There are two methods. One is to break up the combs and place them on a colander, and allow the honey to drain from them into a pan, occasionally stirring the mass. Another is to place the combs in a vessel and gradually heat. The wax will melt and rise to the top; when cool, this may be separated from the honey below, as a solid cake. At the same time any impurities will settle to the bottom of the honey from which it should be carefully poured.

Publishers' Department.

Rice's Steel Plate Engraving of tbe late James A. Garfield, published by J. C. McCurdy & Co., Philadelphia, is far superior to any other picture we have seen of the martyred President; it makes a very appropriate ornament for every home.

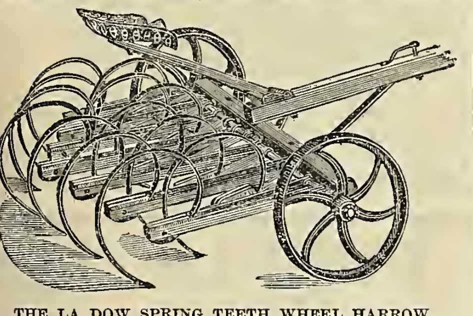
Removal and Change of Name. — Tbe Hagerstown, Md , Agricultural Implement Manufacturing Co. has removed its business to Newark, Ohio, and cbanged its name to Newark Machine Co.

"Structural Decoration" is the title of a neat illustrated pamphlet full of valuable bints and suggcstions to those about to paint their buildings. Published by H. W. Johns Manufacturing Co., 87 Maiden Lane, New York, and sent free to applicants.

The Pacific Guano Company of Boston is one of the oldest concerns of the kind in the world, and embraces in its management such men as George W. W. Dove, the President, John M. Glidden, the Treasurer, C. H. Amory, Louis Curtis, A. T. Crowell, P. H. Sears, and W. P. Warren. The sales are probably larger than tbose of any otber company. For example tbeir sales of Soluble Pacific Guano during last year amounted to fifty-five thousand tons as against 754 tons in 1865.

Ridding Sheep of Lice.—We receive many inquiries as to the best means of ridding sheep of lice and other parasites. Tbe Nintb Annual Report of the New Jersey Board of Agriculture, just at band, states that Little's "Sheep Dip" has been adopted with complete success on the sheep farm of the Secretary of State (Henry E. Kelsey), located in Sussex County. This dip or fluid which is rapidly coming into use in the United States has, it is claimed, no poisouous qualities, and can be used to destroy lice on other animals as well as sheep; it is also used as au internal remedy for worms, and as a wash for sores.

A New Harrow.—In onr boyhood days, on a farm so far west as to make it very expensive to get iron for ordinary purposes, the wooden mold-board on the plow, and wooden harrow teetb, were a necessity. Tbe improvements in harrows during fifty years past have been mainly in the introdnction of iron teetb, tben steel-pointed ones, then strong all steel in the three-cornered or A harrow. Next came the square, tbe oblong, and finally the jointed, double-jointed, or sectional barrows, when improvements balted. Now comes what is claimed to be a further advance, the "spring teetb," as sbown in tbe La Dow harrow, illustrated herewith. The teeth are set on independent movable beams, so that they adapt themselves to nneven ground, and do not clog, while it is claimed tbat their flexibility increases their pulverizing action. The pitch of the teetb is readily adjusted to rnn deep or shallow. Tbe draft is lightened by monnting the frame on wheels, and a seat is provided for tbe



THE LA DOW SPRING TEETH WHEEL HARROW.

driver when desired. Tbe implement can also be rnn backward. By turning the teeth back upon the bar, tbe harrow can be moved from field to field as readily as a cart, while by turning part of them back tbe rest can be used as markers. When desired, a force-feed broadcast sower is supplied as an attachment, for sowing and covering grain at one operation, the depth of tbe covering being regulated by the adjustment of the teetb.

Asphalt and Concrete Walks.—"W. L. N.," Wheatland, Iowa. Tbe various concrete walks are so covered by patents tbat one is in danger of infringing upon them. We have seen good walks made in tbe following manner; having known of its use more than 20 years, we do not think it is patented: The earth is excavated to the depth of three incbes, and edgings made of bricks set on end, or of planks. Three parts of gas tar and one of common pitcb are melted together, and tbis mixture is added to dry sand, as little as will wet it throughout and make the particles cohere, mixing it like mortar, and spreading it evenly. Tbe surface is tben sprinkled with dry sand, and boards laid on, whicb are pounded upon, to make a bard and smooth surface. It is tben rolled, using dry sand to prevent the material from adhering to tbe roller. The walk will become hard in a few days. We bave known walks to be made with cold gas tar and sand, but tbese take a long while to harden. Coal ashes may be used with the sand in proportion of a tbird to a half, and treated tbe same. Care sbould be taken to use as little of tbe tar as will cement the particles togetber, or a hot sun will soften it.

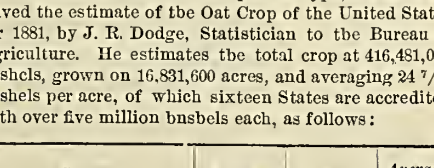
Oat Crop of the United States.—Probably few are aware of the extent of oat culture. The Censns Report for 1880 gives the total yield of wheat at 459,591,093 busbels, grown on 35,487,065 acres, while the Oat crop was 407,970,712 busbels, grown on 16,150,611 acres. We bave compiled and arranged from the reports tbe following interesting items showing tbe amount of the OAT CROP, its acreage and average yield in the whole country, and in tbe diffrent States where not less tban half a million busbels were raised during tbe census crop year (1879). It will be noticed that about one-sixtb

	Bushels.	*Acres.*	*Average ℔ Acre.*
TOTAL in United States....	407,970,712	16,150,611	25¼
Illinois....................	63,206,250	1,959,853	32½
Iowa....................	50,612,141	1,507,490	33½
New York....................	37,575,506	1,261,171	28¾
Pennsylvania....................	33,847,439	1,237,593	27⅜
Wisconsin....................	32,911,246	955,276	34½
Ohio....................	28,664,505	910,388	31½
Minnesota....................	23,372,752	617,427	36½
Missouri....................	20,673,458	968,473	21⅜
Michigan....................	13,190,493	536,167	34
Indiana....................	15,606,721	623,600	25
Kansas....................	8,180,385	435,853	18¾
Nebraska....................	6,555,565	250,399	26¼
Georgia....................	5,544,161	612,350	9⅛
Virginia....................	5,333,081	563,423	9⅞
Texas....................	4,868,916	236,795	20½
Tennessee....................	4,722,938	468,638	10⅛
Kentucky....................	4,582,968	403,444	11⅛
Oregon....................	4,393,593	151,366	28⅜
N. Carolina....................	3,830,622	499,512	7¾
Vermont....................	3,742,282	99,548	37⅞
New Jersey....................	3,710,808	137,426	26⅝
Alabama....................	3,039,274	324,481	9⅜
Dakota Territory....................	2,331,230	89,792	26
Maine....................	2,265,575	78,335	24¾
Arkansas....................	2,187,777	164,208	13⅛
Mississippi....................	1,959,620	198,497	10
West Virginia....................	1,908,505	126,931	15
Maryland....................	1,794,872	101,127	17¾
Washington Territory....................	1,581,951	37,946	41⅝
California....................	1,355,871	49,947	27
New Hampshire....................	1,018,006	29,434	34½
Connecticut....................	1,009,706	36,691	27½
Montana Territory....................	900,915	24,691	36½
Massachusetts....................	645 169	20,660	32¼
Idaho Territory....................	462,236	13,197	35
Utah Territory....................	417,938	19,514	21½

of tbe entire crop is grown in Illinois; about one-eigbth in Iowa; about one-eleventh in New York; over thirty million bushels each in Pennsylvania and Wisconsin; over twenty million bnsbels eacb in Ohio, Minnesota, and Missouri; eighteeu millions in Micbigan; over fifteen millions in Indiana; after wbich the crop drops to eight millions and below.—A remarkable difference appears in tbe *average yield per acre,* viz: from over 41 bnshels in Washington Ter. down to less than 8 bushels in N. Carolina. The table shows what States get tbe best yield.

P. S.—Since the above was put in type, we bave received the estimate of tbe Oat Crop of the United States for 1881, by J. R. Dodge, Statistician to tbe Bureau of Agriculture. He estimates tbe total crop at 416,481,000 bushels, grown on 16,831,600 acres, and averaging 24 7/10 bushels per acre, of which sixteen States are accredited with over five million bnsbels each, as follows:

States.	*Bushels.*	*Acres.*	*Average ℔ Acre.*
Illinois....................	66,094,000	1,979,400	33.4
Iowa....................	42,434,000	1,618,700	26.2
Pennsylvania....................	38,579,000	1,212,700	31.8
New York....................	38,160,000	1,324,700	28.8
Wisconsin....................	31,204,000	1,092,200	28.6
Ohio....................	25,009,000	902,300	27.7
Minnesota....................	23,760,000	667,700	35.6
Missouri....................	22,783,000	959,200	23.8
Michigan....................	18,057,000	552,000	32.7
Indiana....................	15,711,000	683,000	23.
Kansas....................	8,754,000	441,700	19.8
Texas....................	8,324,000	311,100	26.8
Nebraska....................	6,976,000	325,300	21.4
Tennessee....................	6,726,000	472,100	14.2
Kentucky....................	6,534,000	400,500	16.3
Georgia....................	5,566,000	612,300	9.1



VICTORIES UNEQUALED

The **only** machine that received an award on both Horse-power and Thresher and Cleaner, at the Centennial Exhibition; was awarded the two last **Gold Medals** given by the New York State Agricultural Society on Horse-powers and Threshers; and is the **only** Thresher selected from the vast number built in the United States, for illustration and description in "Appleton's Cyclopedia of Applied Mechanics," recently published, thus adopting it as the **standard** machine of this country. Catalogue sent free. Address MINARD HARDER, Cobleskill, Schoharie Co., N. Y.

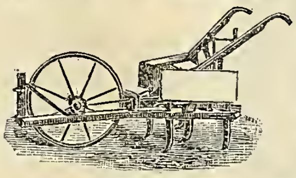
LEWISTOWN, Pa., March 16, 1882.
H. W. Johns M'f'g. Co., 87 Maiden Lane, N. Y.
DEAR SIRS:—The paint purchased of you has given the best of satisfaction and a number of persons who intend to repaint their buildings are asking about prices, and we expect to make good sales this season. Yours respectfully,
H. W. KELLER & SON.

Rev. Leonard Bacon, D. D. Hon. A. H. Stephens, and others recommend them.
Send for circular to
N.H. INVALID CHAIR Co. New Haven, Ct.

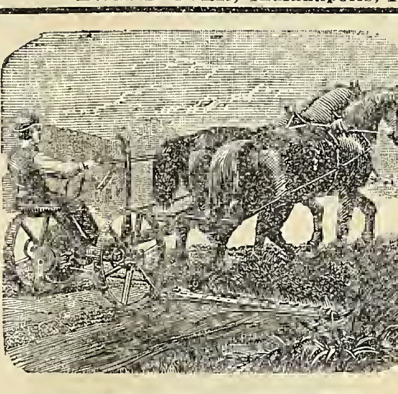
BE SURE

and take advantage of **our Great Offer** made in *American Agriculturist* to send free by mail, on receipt of $1.00, our
SPECIAL INTRODUCTION BOX OF SEEDS,
containing 23 large size 10c. packets of choice vegetable seeds, everything necessary for a Family Garden. Send for catalogue. Address **JOHNSON & STOKES,**
Seedsmen, 1114 Market St., Philadelphia.

"VICTOR" One-Horse Grain Drills.



(3 and 5-Hoed), for sowing *Wheat* between *Standing Corn*, or *Wheat, Rye, Barley, Oats, Rice*, etc., in fallow ground. Can be adjusted also to drill *Corn* for *ensilage* purposes. (Send for circulars). Manufactured by
EWALD OVER, Indianapolis, Ind.



ADRIANCE BUCKEYE MOWER AT WORK.

ADRIANCE, PLATT & CO.,
MANUFACTURERS OF
ADRIANCE and ADRIANCE BUCKEYE
MOWERS AND REAPERS,
165 GREENWICH STREET, NEW YORK.
Manufactory, Poughkeepsie, N. Y.

The ADRIANCE BUCKEYE has for *a quarter of a century* held its position as the LEADING MACHINE. Its *principles of construction are the only ones that have stood the test of time, surpassing* all others in SIMPLICITY, STRENGTH, LIGHTNESS OF DRAFT, EASE OF MANAGEMENT, DURABILITY and CAPACITY TO DO GOOD WORK ANYWHERE.

The ADRIANCE REAPER has proved its superiority to all machines of its class. It is Light, Strong, Simple, Easily Operated, Completely under Control of Driver, Perfectly Balanced, has a Cased Gearing, Folding Platform, no Weight on Horse's Neck, no Side Draft.
Descriptive Circulars forwarded by mail.

Tobacco Dust!

$2 PER BARREL—FREE ON BOARD.
Invaluable to Farmers and Market Gardeners. Destroys Bugs, Worms, and all kinds of Insects that infest young plants. Kills Lice on Poultry, and all kinds of vermin on sheep and other animals. P. Lorillard & Co., Jersey City, N. J.

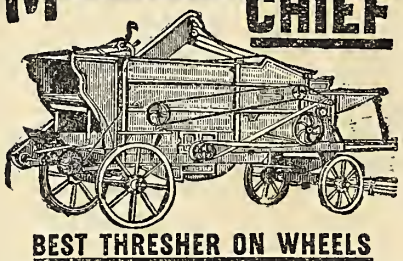
Patent Caster Rolling Colter.
With it, the plow is easier held, cuts smoother land side, leaves cleaner furrow; easier on team. Always follows in line of draft, never guiding plow to or from land; can be set wide or narrow, deep or shallow, fits any right or left hand, wood, iron or steel beam plow. Complete, with polished blade, boxed by express, to any address, on receipt of $3.50. MANNY MFG. Co., St. Louis, Mo. Agents Wanted. Circulars free.

100 FARMS and Tract for Colony, in northern community, fifteen miles from Washington, D. C. Address O. E. HINE, Vienna, Faifax Co., Va.

WARranted best sold; 40 new, no two alike, Chromo Visiting Cards, name on, 10c. Agents Wanted. L. JONES, & CO., Nassau. N. Y.

CHILLED PLOWS
FURST & BRADLEY MFG CO.
CHICAGO, ILL.
Deep chilled and splendidly shaped for light draft.
SEND FOR PAMPHLET.

MINNESOTA CHIEF

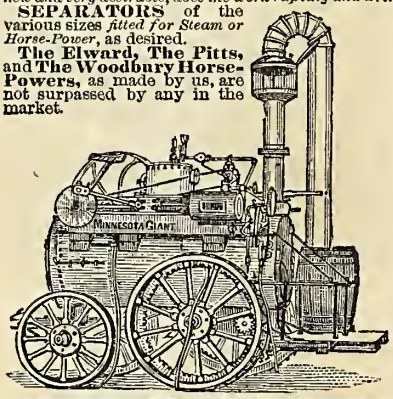


BEST THRESHER ON WHEELS

Is not a Vibrator nor an Apron Machine. Is wonderfully simple and admirably perfect in its threshing and separating qualities. **Saves all the grain, and cleans it ready for market.** Runs easily, is constructed durably, is finished beautifully, is the most economical, least expensive, and **most satisfactory machine in the market.** Will handle wet grain as well as dry. Has no equal in threshing flax and timothy, threshing and cleaning both as well and nearly as rapidly as wheat, and requires no change except the sieves. *Has more square feet of separating and cleaning surface than any other machine made, and can not be overloaded.* Is both over- and under-blast. Our **CLOVER HULLING ATTACHMENT** *is new and very desirable, does the work rapidly and well.*

SEPARATORS of the various sizes *fitted for Steam or Horse-Power*, as desired.

The Elward, The Pitts, and **The Woodbury Horse-Powers,** as made by us, are not surpassed by any in the market.



MINNESOTA GIANT ENGINE

For straw, wood, or coal fuel; *has a cylindrical return flue boiler*, making it safe from explosions and economical in fuel. Its cylinder is 7½×12.

We also make the **Stillwater Farm Engines Nos. 10 and 12,** having fire-box return flue boilers; the No. 10 for wood or coal fuel; the No. 12 for straw, wood, or coal fuel. All these Engines are made and finished in the *most perfect manner*, and **Traction Attachments** can be furnished with any of them if desired.

☞ *For Price-List and Circulars,* address

SEYMOUR, SABIN & CO.
Manufacturers, Stillwater, Minn.

GUNS, etc.

So many inquiries come to us from our readers, we have made special arrangements whereby we are enabled to furnish them with Guns of every make at very low prices. Any one of the readers of this paper who for the next thirty days desires to secure a double or single barrel shot gun—breech or muzzle loader—or a rifle of any make, should address us, stating what they desire, etc., etc. Catalogues of guns, with the prices attached, will be mailed on receipt of letter of inquiry, and questions will be answered.

ORANGE JUDD CO.,
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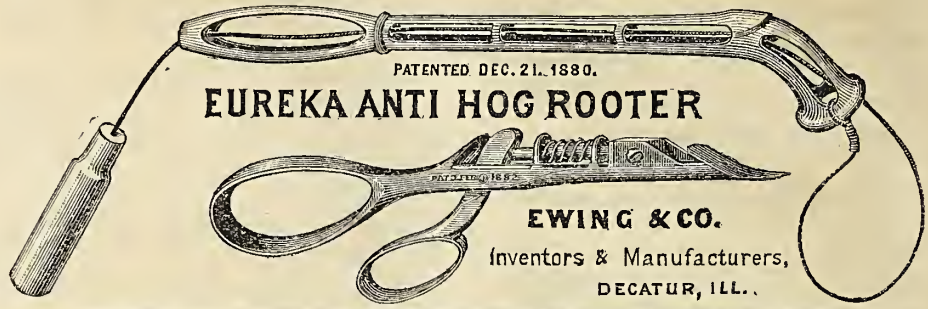
HOG RINGING A FAILURE.
Our Tendon Cutter a Success.
ANIMAL CONQUEROR



The above Cut represents our Tendon Cutter, and Animal Conqueror or Holder.

By the use of the cutter we take from the Hog its power to root, by removing a section or piece of the tendon or muscle which operates the shovel at the end of the nose. This instrument passes through the skin and under the tendon; when the operation is performed it is withdrawn, bringing out with it the piece of tendon. It does not cut out a particle of the skin or flesh, therefore the wound heals quickly. It leaves the Hog as powerless to root as you would be to use your finger when a portion of the tendon or leader was taken from it. While performing the operation, the Hog must be held perfectly steady, and for that reason, you will want our holder which excels anything in that line ever invented.

All new inventions are looked upon with suspicion, but we are confident that when you see these instruments used, you will be loud in their praise, and will never use another ring or mutilate a hog by using a nose cutter or snooter. Any number of testimonials, like the following letter, furnished on application.

Messrs. EWING & Co., of Decatur, Ill., were out at my farm at Casner Station, Macou Co., Ill., on March 7th, and operated on some hogs with their Anti-Rooter, to the entire satisfaction of myself and others present at the time, as it has proven up to this date. The hogs have not rooted a particle since the operation, and are doing well. I have used rings as often as twice a month on the same hogs, and then they *would root*. The Conqueror and Anti-Rooter, both are a success without a doubt.—L. B. CASNER. (Copy.)

If not found on sale in your locality, will send sample Cutter and Holder on receipt of **$3.00.**

EWING & CO., Decatur, Illinois, Manufacturer and Patentee.

AMERICAN MACHINE CO.'S ICE CREAM FREEZERS
Styled "CROWN," "AMERICAN," "STAR."
ARE SOLD AT ALL THE LEADING HARDWARE AND HOUSE-FURNISHING STORES.

Their chief merits are: **A Strong Cedar Tub; Complete Covering of Gearing; Revolving of Can after Removal of Stirrer; Packing Ice with Cross-bar fixed in Position; Self-Adjusting Scraper; Best Material and Workmanship.**

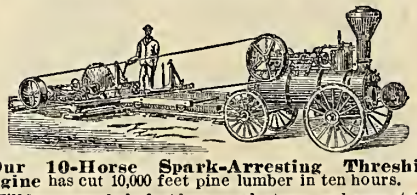
Potato Bug Poison. LONDON PURPLE Potato Bug Poison.
TRADE MARK.
☞ If nearest dealer has not got it, write to **HEMINGWAY'S LONDON PURPLE CO. (Limited,) P. O. Box 990, No. 90 Water Street, New York,** who will send prices and testimonials.

ESSEX PIGS A Specialty.

75 to 100 Pedigree Pigs for delivery in June, six weeks to two months old. Write for prices.

Also Brown Leghorn (prize winners) EGGS, @ $1 per doz., and B. B. R. G. Bantam Eggs for Hatching (imported), @ $1.50 per doz., in new baskets. Safe arrival guaranteed.

C. W. CANFIELD, Bradford Co., **Athens, Pa.**



Our 10-Horse Spark-Arresting Threshing Engine has cut 10,000 feet pine lumber in ten hours.

Will burn wood six feet long, coal, straw, and corn stalks.

Send for Price List and Catalogue "S."

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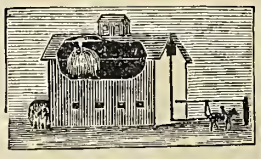
Box 843. Corning, N. Y.

Onondaga Pat'd Road Scraper.

Made entirely of the best iron and steel. They are strong and durable, and what every road district in the country needs. Price is only $25.00. For circulars and particulars, address, **F. G. AUSTIN,** Box 293, **Skaneateles, N. Y.**

Buy Porter's Patent Hay Carrier,



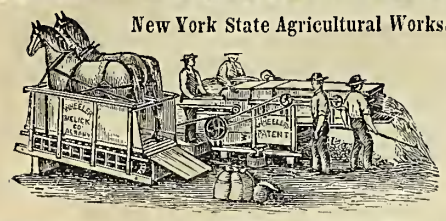
The acknowledged Standard Carrier of America. You then can manufacture and use my new invention represented by this cut, without paying royalty. If you use any other Carrier, send $3, and I will send the Porter Singletree and Sling, with right to use it. No Carrier is perfect without it. The Porter Carrier was awarded first premium at the Minn., Iowa, Mo., and Ill. State Fairs, and the great St. Louis Exposition of 1880 and '81 over all others. Ask your dealer for them, or send for illustrated circular. I also have a plan for a model barn, with a diagram, showing style of building and a detailed description of same, with builder's estimate of material, giving size of each timber, number of shingles and pounds of nails used in its construction. I will send same on receipt of stamp.

J. E. PORTER, OTTAWA, ILL.

THE CULTIVATOR SPRINGS MADE BY FURST & BRADLEY MFG CO. CHICAGO ILL
Exert their greatest force when raising plow, which is the only correct principle. SEND FOR PAMPHLET—SENT FREE

MEDAL MACHINES.

New York State Agricultural Works.



First Premiums at all Competitive Trials.
NEW SAFETY AGRICULTURAL STEAM ENGINES.
Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Corn Cultivators, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Wheel Disc and Spring Tooth Harrows, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO.,
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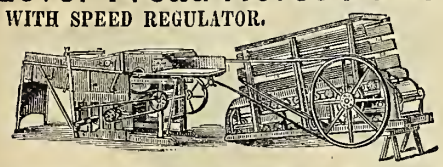
Send stamp for illustrated and descriptive circular,

HEEBNER'S
Level Tread Horse Power
WITH SPEED REGULATOR.



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"Union" Feed Cutter, Circular and Drag Saw Machine, etc., Send for Catalogue. **Heebner & Sons,** Lansdale, Mont. Co., Pa.

SPRING STEEL TOOTH
HORSE RAKES.
THE CHAMPIONS OF THE WORLD.
Highest Award, The Medal of Honor,
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No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted where we have none.
Send Stamp for Catalogues of RAKES, THRESHING MACHINES, &c.
WHEELER & MELICK CO.,
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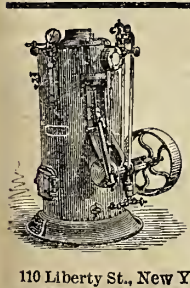

Bookwalter Engine.
Especially adapted for Dairies, Creameries, and Farm purposes. Can be used for years without any repairs. Over 2,200 in actual use. Not one ever exploded. Can be run by any one of ordinary intelligence. Every Engine complete, ready to use as soon as received. No Engine built so good and so low in price.

3	Horse-Power....	$240.00
4½	" "	280.00
6½	" "	355.00
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Illustrated Catalogues Free.
JAMES LEFFEL & CO.,
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TRUTH INDISPUTABLE.—Dildine's Adjustable Sieve adjusts to 100 and more sized meshes. Separates coarse and fine dirt, foul seeds, etc., from Grain, Seeds, Beans, Peas, etc., better than all others combined. Address *Agents Wanted.* MILTON SIEVE MFG, Co., Milton, Pa.

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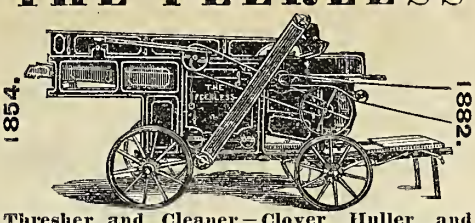

Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—The Aspinwall Potato Planter, and Digger. Our machines are guaranteed to work well, and have received the highest testimonials and cannot be excelled. **B. GILL & SON,**
Trenton Agricultural Works, Trenton, N. J

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SEND FOR ILLUSTRATED CATALOGUE
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BRADLEY & COMPANY
SYRACUSE, N. Y.

Received Medal AND HIGHEST AWARD OF MERIT AT CENTENNIAL.
Send for Catalogue.

STEAM ENGINES,
A. B. FARQUHAR, York, Pa.,
Cheapest and best for all purposes—simple, strong, and durable. Also Horse Powers and Gin Gear.
SAW, GRIST AND COB MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

SAWMILLS A specialty.

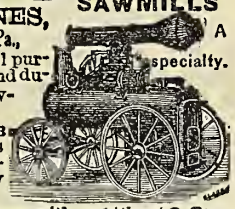


Fig. 1.

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Boiler & cylinder larger than other makers.

Fig. 2.

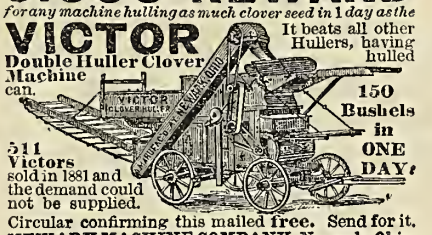
Send for Catalogue.

The Farquhar Separator
(Warranted)
Penna. Agricultural Works, York, Pa.
Lightest draft, most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.

Steam Engines, Horse Power and Threshers of all kinds. Also, Ploughs, Cultivators, &c., &c.

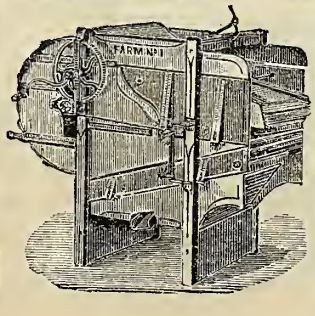
AND HIGHEST PRIZE AWARDED SEPARATORS,
THE SILVER MEDAL AT Paris Exposition.
Send for Illustrated Catalogue. *Address A. B. Farquhar, York, Pa.*

$1000 REWARD
for any machine hulling as much clover seed in 1 day as the
VICTOR
Double Huller Clover Machine can.
It beats all other Hullers, having hulled



150 Bushels in ONE DAY!
511 Victors sold in 1881 and the demand could not be supplied.
Circular confirming this mailed **free.** Send for it.
NEWARK MACHINE COMPANY, Newark, Ohio.
Owners of Patents and the only Manufacturers in the world.

THE "CENTENNIAL" FANNING MILL.



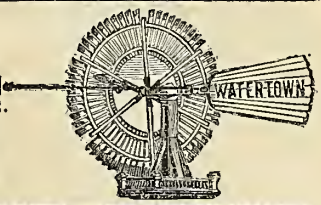
THE BEST MILL IN THE WORLD. It separates Oats, Cockle, and all foul stuff from Wheat. Is also a perfect cleaner of Flax, Timothy, Clover, and all kinds of seeds. The great improvement over other mills is that it has two shoes. It is especially adapted for warehouse use. *Send for Descriptive Circular and Price-List.* Liberal discount to dealers.
Address, S. FREEMAN & SON, Racine, Wis.

78 West Baltimore St.
BALTIMORE, Md., April 3, 1882.
H. W. Johns M'f'g Co., 87 Maiden Lane, N. Y.
GENTLEMEN:—I had my house in the country painted with your Liquid Asbestos Paint four years ago, and it looks as bright and glossy now, as when first applied.
I contemplate some alterations and will need more Paint. Please send me your sample sheets and prices. Respectfully yours, FRED. W. WILD.

HALLADAY
STANDARD WIND MILL,
VICTORIOUS AT
Phila., 1876—Paris, 1878
25 Years in Use.
GUARANTEED SUPERIOR
To any other Windmill Made.

17 Sizes—1 Man to 45 Horse Power.
Adopted by the leading R. R. Co.'s and by the U. S. Government at Forts and Garrisons.
$3,500,000 worth now in Use.
Send for Catalogue "A."
U. S. Wind Engine & Pump Co.,
Batavia, Ill.

THE
Watertown WINDMILL
THE BEST IN USE.
Write for descriptive catalogue A
H. H. BABCOCK & SONS,
Watertown, N. Y.



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WIND MILL POWER
The Best in the World.

It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.
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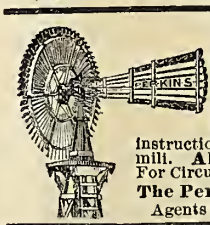
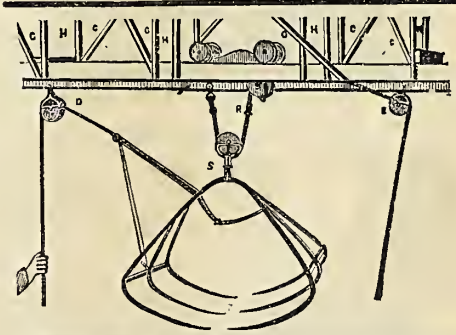
OLD RELIABLE STOVER.

We manufacture the Old Reliable Stover Wind Mill, for pumping and grinding purposes. Also O. E. Winger's novel and improved double feed grinders, operated by pumping Wind Mills, and by any other power. Also geared Wind Mills for running Machinery. Write for catalogue and agencies.
E. B. WINGER, Freeport, Ill., U. S. A.

THE PERKINS'
Wind Mill



is the Strongest and Best Self-Regulating Wind Mill made. Full instructions for erecting sent with the first mill. **All Wind Mills warranted.** For Circulars and Prices address
The Perkins' Wind Mill & Ax Co.,
Agents wanted. **Mishawaka, Ind.**



Grappling Hay Fork and Railway Hay Conveyor. Best combination known. Used by thousands.
Circulars sent. Agents wanted. } **G. B. WEEKS,** SYRACUSE, N.Y.

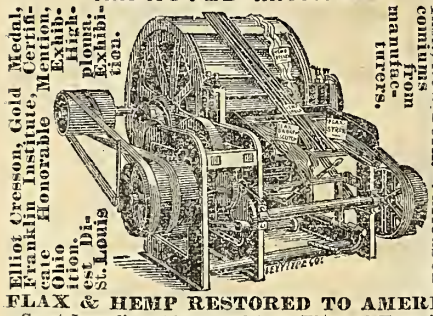
Gardner's Railway Pitching Apparatus.

Consisting of Grappling Fork, Carrier, Pulleys, etc. This Fork, Car, etc., has been sold throughout the U. S. and Canada with the greatest success. It has won its way amid the greatest competition of Forks and Carriers, and is without doubt the best Hay and Grain Unloader made. Every farmer should send for a circular now. E. V. R. GARDNER & Co., Westtown, Orange Co., N. Y.

HATCHETS AND AXES
WITH PATENT COVERS,
For Ranchmen, Campers, etc. Send for a circular to
A. CROSBY & CO., Waterville, Maine.

WALKING CULTIVATORS
FURST & BRADLEY MFG. CO.
CHICAGO, ILL.
For cultivating corn, cotton or any crop grown in rows sufficiently far apart to admit of its use.
SEND FOR PAMPHLET. SENT FREE.

AMERICAN VEGETABLE FIBRE CO.
IMPROVED MACHINE.



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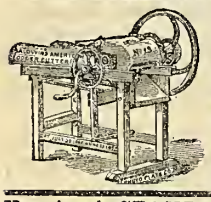

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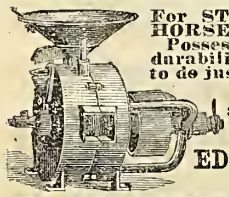

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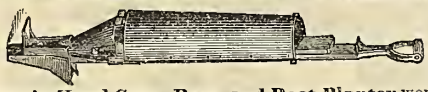

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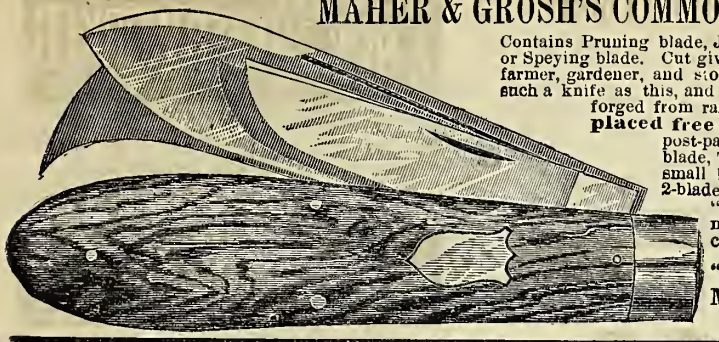

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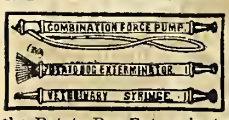

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BLANCHARD CHURN
GET THE BEST

Five sizes made for Family Dairies. Five sizes for Factory use. All our goods are of perfect stock and the best workmanship. They are strong, simple, efficient, convenient and durable. They continue to be THE STANDARD CHURNS OF THE COUNTRY.

Inquire of the nearest Dealer in such goods for a "BLANCHARD BUTTER-WORKER," or a *genuine* "BLANCHARD CHURN," and if he has none on hand, send postal for Prices and Descriptive Circulars to

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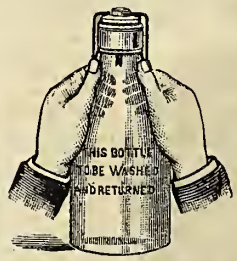
THE CELEBRATED
WARREN MILK BOTTLES.

PATENTED MARCH 23d, 1880.



Nothing but Glass in Contact with the Milk.

Safety Shipping Boxes.
Quarts, Pints, ½ Pint, Cream.

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Best and Cheapest.
No inside fixtures, always right side up. Easiest to use. Nine sizes made. Three sizes **Nesbitt Butter Printer.** Every churn and printer warranted. One churn at wholesale where we have no agents. Send postal for circulars.
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Peach Cider is a new discovery. Patented October 25th, 1881.

$3.00 per Bushel Net for your Peaches at Home.

SALES PERMANENT AS FLOUR.

Rights to Manufacture and Territory for Sale.
Address or call upon
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Middletown, Frederick Co., Md.

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The editors of the FOREST AND STREAM, (39 Park Row, N. Y. City), invite the views of landowners on this topic.

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The New Sheep Dip
NON-POISONOUS
(Patented in U. S. July 3, 1877.)

MORRIS LITTLE & SON, Sole Proprietors & Manufacturers.

The cheapest and best Dip of the day; is fast superseding all others. Mixes freely with **cold** water. One gallon is enough for 100 of cold water for ordinary dipping.

Perfectly safe to use in the coldest weather.

Increased growth and improved quality of the wool more than pays cost of the Dip. Price per gallon, $1.80.
Send stamp for U. S. testimonials to

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INCLUDES A PERFECT REFRIGERATOR BOX.
Deep Setting Perfected without Ice.

Gets all the Cream with well or spring water. Only **1-4** the ice is called for that **is used** by any other Creamery. Cans sold without box, and furnished with glass guages when requested. Special terms given for fitting out large creameries.

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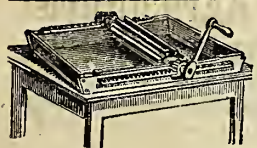

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Circulars free.

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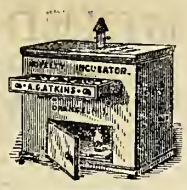
Novelty Incubator.
Patent applied for.



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Eggs, $2 for 13. Chicks for Sale in the Fall.
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Prize Stock, **$2** for **13, $3** for **26.** Carefully packed for express. Having long bred these varieties only, introducing fresh blood from best strains obtainable, regardless of cost, have superior stock. F. C. Biddle, Chadd's Ford, Pa.

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Halsted's Book on "*Incubation and Incubators,*" a complete text book on this subject. Nearly 100 illustrations. 75 cents by mail.

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Chester White, Berkshire, and **Poland China PIGS,** and **Setter Dogs,** bred and for sale by ALEX. PEOPLES, West Chester, Chester Co., Pa. *Send stamp for Circular and Price List.*

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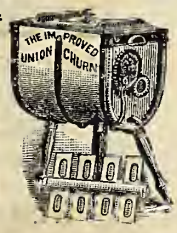

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The New Sheep Dip
NON-POISONOUS

CURES SCAB, KILLS TICKS and LICE, IMPROVES WOOL.

READY FOR USE. COLD WATER ONLY REQUIRED.

Cheap, Harmless, Clean. Pleasant, Convenient, Rapid, Infallible. Send for prospectus containing price and testimonials, from all parts of the world, to the sole manufacturer's Wholesale and Retail Agent (here from England specially on this business), ALFRED MITCHELL, 317 Broadway, New York (P. O Box 517).

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SELF-SUCKING,
BY RICE'S PATENT Mal. Iron WEANER.
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Maps, Pamphlets and full information FREE.
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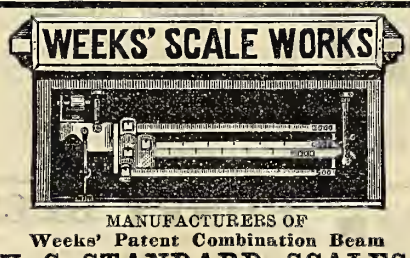

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U. S. STANDARD SCALES,
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No Weights to be Lost or Stolen.
Price of 3-ton, platform 7x14 ft.....$55.00
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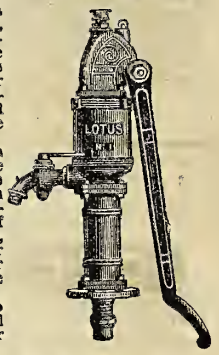

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(MENTION THIS PAPER.)

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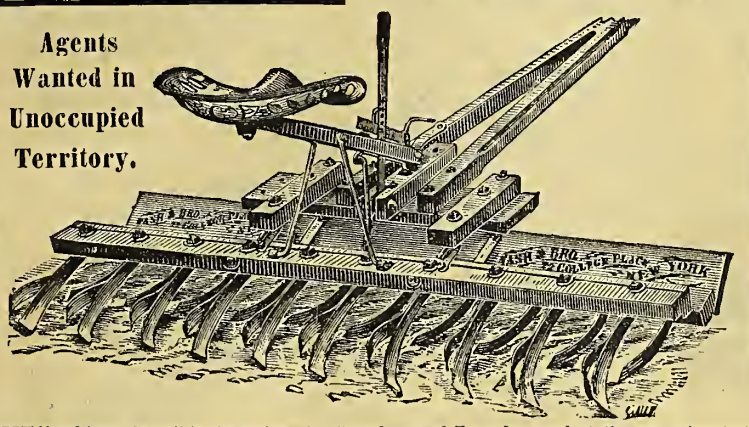
Highly Commended by Editors of this Paper after thorough Trial.

Agents Wanted in Unoccupied Territory.



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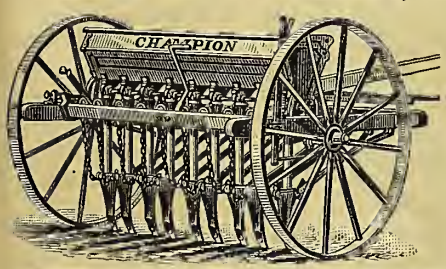
WITH OR WITHOUT
FERTILIZER ATTACHMENT, SPRING HOES, OR CORN PLANTER.



Force Feed Grass Seeder.

Every Fertilizer Drill warranted to sow easily, evenly, and accurately, any of the various kinds of

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The only Grain Drill having a Special Device for Planting Corn for the Crop.

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No Grain Drill in the market can perform so great a variety of work. Many thousands in use.
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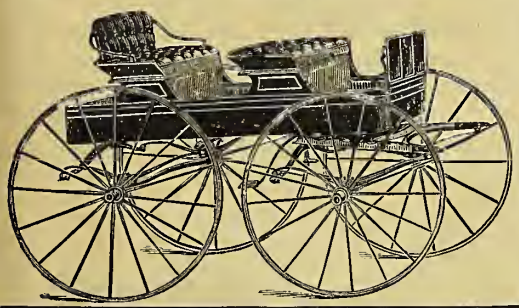

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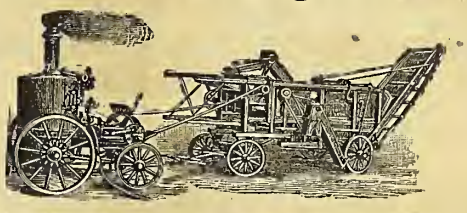

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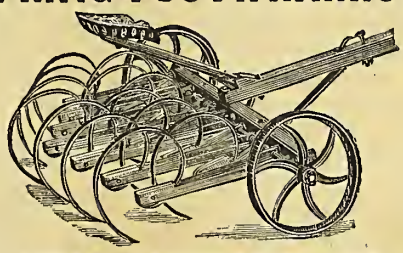

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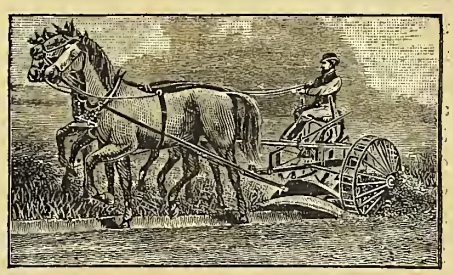

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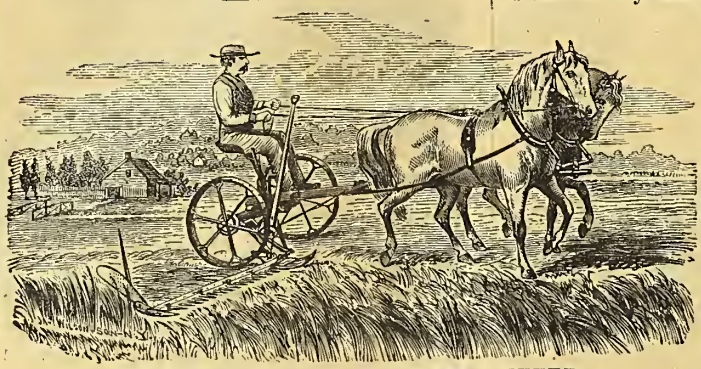


THE NEW CHAMPION GRASS CUTTER.

There is nothing more pleasant on a hot Summer day than a jaunt to a way-side farm. The world and its people seem to be at peace with themselves; the air is filled with fragrance of new mown hay, and contentment reigns supreme.

Off to our right a farmer is whistling away the drowsy afternoon as he lazily guides the team in their swaths around the meadow, mounted upon a New Champion Mower, that is almost as sacred to him as his family. He fears not man or the elements. What a change from the primitive scythe that his father swung, from early morn till night and found that but an acre or two had fallen before him.

Now, the succeeding generation mounts a Champion, drives upon the field as proud as a Roman warrior and clips down a twenty acre field from sunrise till evening, without trouble or toil.

Progress upon the farm, as well as progress in the factories, has made such rapid strides that we are apt to overlook valuable inventions that deserve more than a moment's notice. For instance,

THE NEW CHAMPION MOWER,

a picture of which appears on this page of the AGRICULTURIST, has now become the recognized leader among its class. The makers of this implement have succeeded in stripping it of all its surplus weight and cumbersome parts, simplicity pure and simple has been obtained, without a detriment to the machine in general. Mechanical ingenuity, with the aid of a large field experience has brought about the desired result, and in this machine we find all that go to make a reliable, simple and efficient grass cutter.

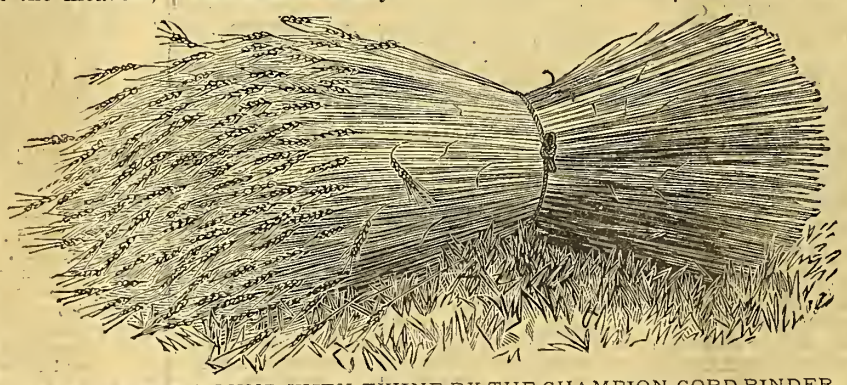
A NEW PRINCIPLE

in mechanics has been introduced in the make up of this Mower, and the New Champion is a machine for cutting grass that possesses peculiar points of excellence not found on other Mowing Machines. The complicated mass of gear wheels that is found upon other grass cutters is conspicuous by its absence in this implement. The power to drive the knife blade is derived from a pair of parallel toothed wheels that meet face to face, engaging fully one-third of the teeth at one time. By this mode of obtaining power the greatest speed is obtained without injury to the wheels or bearings, besides the pressure is so evenly divided that the wear upon these gear wheels is imperceptible.

FULLY ONE-THIRD MORE DRIVING POWER

is derived by this new movement than is obtained from the old style of bevel gear and spur pinions, besides the motion is directly transmitted to the knife, while fully one-third of the power on the old-fashioned mowing machines is lost by friction while passing through the various gears, pinions, spur wheels, bevel gears, etc., before it reaches the cutters.

This mower is the recognized leader of grass implements. No expense has been spared in its construction to make it the strongest machine for the purpose required in the field. It is sold upon its merits and each purchaser is accorded a liberal trial of the machine. They have been so extensively used throughout the Continent, that further comment upon them here is unnecessary.



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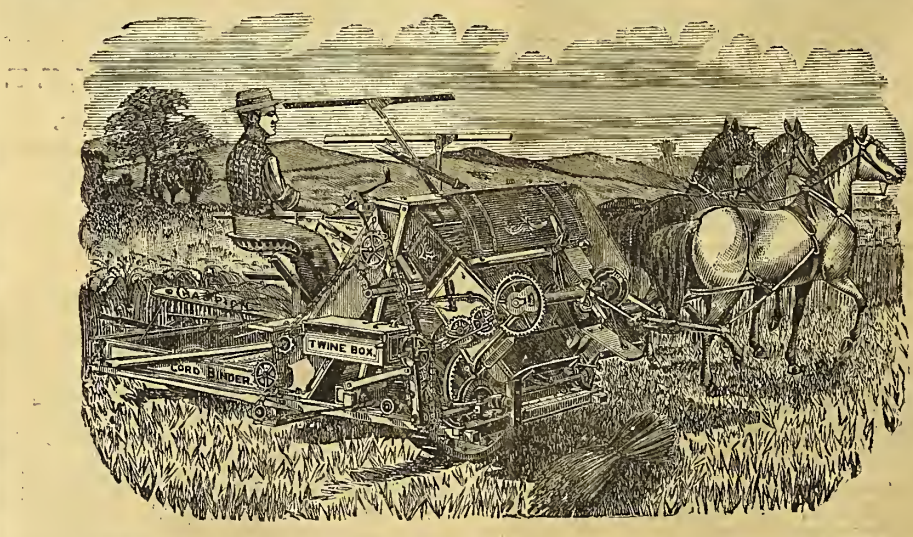
The limited space will not permit of further description, but the manufacturers will send you their large illustrated catalogue free, containing a full history of this addition to the Champion Harvesting machine family.



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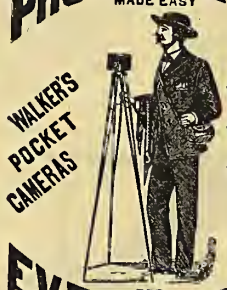

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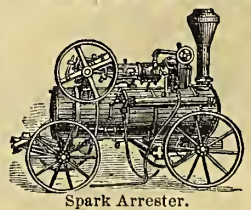

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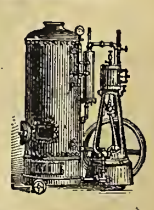

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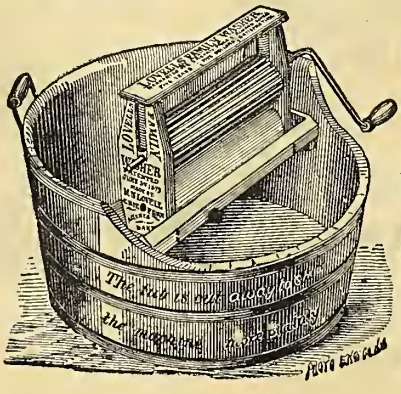

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VOLUME XLI.—No. 6. NEW YORK, JUNE, 1882. NEW SERIES—No. 425.

THE CHILDREN AND THEIR PET LAMB.—*Engraved for the American Agriculturist.*

In our picture the artist has not only chosen a subject appropriate to the season, but one illustrating a pleasing rural scene. The sweet face of the child whose arms embrace the petted lamb, beams with affection, indicative of the early development of the motherly instinct so often exhibited in dressing and tenderly caring for dolls, and in many miniature house-keeping arrangements. There is also a responsive feeling manifested by her companion, whose hand, outstretched to pat the favorite, says more plainly than words, "I love him, too." Those parents are wise who provide for every child, boys as well as girls, one or more pets that they can call their own, and recognize their right of ownership. Attachment to home and kindly feelings are in this way early cultivated.

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Important Announcements will be found on Page 264. Subscription Terms and some Postal Matters, etc., are given in detail on Pages 272 and 263.

The full exposures of humbugs and frauds in this number of the American Agriculturist make it worth far more than a whole year's subscription to any farmer in the country. Show it to your neighbors.

AMERICAN AGRICULTURIST.

NEW YORK, JUNE, 1882.

Suggestions for the Season.

Most Important to Farmers.

No matter how well one's plans are laid, how good the soil, how fully are provided implements, teams, seed, and fertilizers, if a man is laid on his back, or confined to his house by ill health, or if he feels so poorly that he can scarcely drag through the day, the best success can hardly be hoped for. If so situated, as few farmers are, that one can command abundant help, and if able to be with the workmen, directing and encouraging them, still, if the physical organization is not in order, the mind and the judgment will be more or less affected, and the most successful plans are not certain to be made and carried out.—Out-door exercise, in country air, contributes so much to health and vigor, that farmers are, as a rule, the most careless class in regard to keeping their own bodies in the best condition. Some are even more careful of their animals than of themselves. Mechanics, both employers, journeymen, and apprentices, usually have limited hours of labor, nine or ten in the twenty-four, with part of Saturday off, and these hours are in the best part of the day, when the sun is up, and the miasmatic vapors arising from the ground always and everywhere, are lifted up and dissipated. From the nature of their occupation, farmers necessarily work or "chore" early and late during the busy season. They are out in the morning while fogs, dews, and organic exhalations hug the earth before the sun's rays have started a brisk circulation, and ascending currents carry upward and dissipate the unhealthful stratum of atmosphere which the colder night temperature brings down. (For this reason, sleeping in the second story, as high up from the ground as practicable, is always better than to occupy a first-floor bed-room, especially during spring, summer, and autumn.)—Then, as night comes on, the falling temperature and dews have a stronger effect upon the system, wearied and depressed by the long day's hard labor, and the night choring is the most risky portion of the day. Though the early morning air is most loaded with unhealthful exhalations, the body is then invigorated by rest, and the temperature is rising instead of falling. Health and vigor are so important, that we offer some suggestions elsewhere for increasing and conserving them.

Will You Feed Hay or Wood?

A great deal has been said and written about the proper time of cutting hay. Prof. Jordan discusses the subject from an experimental and scientific standpoint, on page 249 of this number, and another item elsewhere refers to Mr. Sanborn's experiments.—The outcome of the discussion and experiments, thus far, seems to be that the best time, all things considered, is to cut the grass just after it has come into full bloom, though many think the preferable time is just when it is coming into full blossom. As it is impossible to always mow every field just at the right moment, the general safe rule is, we think, to be all ready to begin at full bloom, and finish before it is entirely past.

There is this important fact to be kept in mind, viz., that as soon as grass of any kind has attained its growth, and is full of juices, it begins to change more and more into woody fiber, and that when fully ripe, a large part of the stems or stalks differ very little in composition from dry wood. And every one knows that dry wood is neither easily digested nor nutritious. It stands to reason that a stalk of grass cut when it is full of juice containing sugar, gum, and protein compounds, and cured thus, must be more nutritious than if left standing until a part of these constituents have changed into woody fiber. Feeding hay not cut until it is thoroughly ripe, is giving the animals that which is in part only so much wood.—The practical lesson is, make a good ready well in advance, now, and have the barns, mows, stacking arrangements, mowers, scythes, horse and other rakes, forks, wagon racks, in short, all things, in perfect order—and the work planned, so as not to let any hayfield get into the fully ripe condition. Head work beforehand, will save hard work and worry, and secure better hay.

Crowd in Another Acre,

Except under a certain condition. It is too soon to predict good or poor crops. The gauntlet of storms, cool weather, rust, and insect ravages, has yet to be run by every farmer everywhere, before he knows how much hay, wheat, oats, corn, or any other crop will be safely gathered in good condition. It therefore behooves every one to now get seed into every possible acre, and half acre. If the crops are poor, every additional acre will help out. If they are good, every such acre will increase the surplus.—*It is not too late* to plant corn. We have seen good corn from seed planted after the middle of June. In multitudes of instances we have known cold, wet weather to rot the seed planted in May; in many others, the plants got a poor start for the same reason, and made slow growth all the season, when seed planted in the warm soil of the first half of June, started at once, made vigorous growth, and at the gathering showed much better per acre in the crib than the May planting. So, cast about, and see if it be not possible to add a little to the surface of growing corn, or of something else.

"Except Under a Certain Condition."

"Crowd in another acre, except under a certain condition," is urged upon our readers above.—What is the exception?—Bad weather and insect ravages, especially the latter, can not always be guarded against. But weeds lessen the corn yield, one year with another, taking the country together, far more than grasshoppers, cut-worms, birds, and all other pests. Indeed, is it rash to say that weeds exert, on the whole, more influence upon a corn or potato crop than the weather, in average years? A mass of weeds around the roots of crops, not only shut out the vivifying sun's rays, so necessary to vigorous growth, but every weed-stalk and leaf allowed to grow, steals some nutriment that the crop roots ought to have. Will any one contend that, on a weedy soil, a planted hill or drill crop, left to grow with no cultivation, will be likely to yield half as much as one kept clean of weeds? We emphasize the fact that every single weed left to grow takes something from the crop.—The "certain condition" referred to above is, that *if* a farm has already more hoed crops planted than there is any certainty or probability of keeping under fair subjection, as to being smothered by weeds, by home help or hired extra force, then it may not be advisable to add the "extra acre," so strongly commended; but rather turn the whole attention to securing the best results from that already planted.

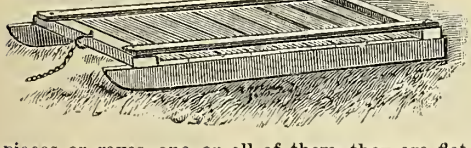
City People in the Country.

City people go to the country for health. Most who do so gain somewhat in vigor, but mainly because of the change in one's current of thought, relief from mental strain, simpler diet, and more physical exercise. But they often lose much they might gain, and, if not prostrated by sickness, very many carry home the seeds of disease, that earlier or later develop into suffering if not ultimating in death. And this because of ignorance or neglect on a single point. The pavements or hard surfaces of city streets, the brick walls and even the wooden ones of the compact dwellings, absorb heat during the day and retain it up to midnight, partially until morning. This heat radiates slowly from such surfaces, and air currents, obstructed by the buildings, do not circulate freely to carry heat away. For this reason city people can sit on the porches or

verandas, or in rooms with windows all open, until a late hour, without any marked chilliness. But in the country, the soil and vegetation quickly radiate into the air the day's accumulation of warmth, and before the sun touches the horizon the temperature of the atmosphere is rapidly falling. Hence those who carry city habits to the country, sitting outdoors or before open windows in the evening, neglecting to put on additional clothing at sundown, and more at a later hour if needed, are pretty sure to lay the foundation of catarrhs, colds, and lung complaints, or other diseases, that largely counteract, if not entirely overbalance, the benefit derived. Attention to this one item will in most cases, in connection with the other advantages named above, make a few months, weeks, or days even, spent in the country, of inestimable value to every dweller in any densely populated city.

A Farm Tool-Boat.—Very Convenient; Cheaply and Quickly Made at Home.

One of the greatest conveniences on every farm is a simple sled, resembling the ordinary stone-boat, for moving plows, harrows, and other implements, or barrels of seed, fertilizers, etc., to or from the fields, or anywhere about the premises. Such a low vehicle saves a deal of lifting heavy articles into wagons or carts. Any man can construct one in less than half a rainy day, and with but a trifling outlay. The two runners may be of hard-wood scantling, 4 inches square, and 7 to 9 feet long—the straighter the grain of the wood the better—or two poles of suitable size may be cut from the woods, and the top surface hewn flat with an axe. The front ends are tapered upward with a long scarf, to make them run easily. Frequently one can find in the woods suitable poles having a natural bend just adapted for the fore end of the runners. Far enough from the front and rear ends to avoid splitting, two cross-pieces of scantling or poles, 3 to 3½ feet long, are laid on, and between these, inch boards of the same length are laid across, and spiked on to the runners with large nails. Over the runners are placed two raves or side-pieces, scantling or poles of smaller size than the runners, and of about the same length. If round poles are used for the runners, cross-



pieces or raves, one or all of them, they are flattened where they come together at their crossings, to make good joints. But without flattening, they may be let partly into each other, especially the cross-pieces and raves, by sawing a little ways in, and cutting out the wood smoothly with a broad chisel.—The three pieces may be fastened together at the four corners with a tough wooden pin, driven firmly in an inch auger hole. But strong, machine-made iron bolts, with a head, screw and nut, can be got cheaply at almost any hardware or country store, or the blacksmith will make them. Put these through from the bottom upwards, and sink the head well into the runners, to be out of the way when they wear off somewhat. Put the nut on at the top with iron washers, or with two or three thicknesses of leather washers cut from old boot-legs. If the bolts project upward, to be troublesome, nail over each a bit of wood with a hole in it to receive the bolt, and taper the wood off each way. The team can be attached to a clevice in the middle of the front cross-piece, or a chain may be put round and kept in the center by cutting a notch in, or by driving in iron spikes or strong wooden pins. This cross-piece needs to be strong enough to bear any pulling force likely to be applied. Unless the raves or side-pieces are well notched down upon the cross-pieces, the space between the raves and runners can be closed with a strip of board nailed on the inside, if the sled is to be used for hauling manure, earth, or gravel. If desired, wide boards can be set in along the sides and across the ends, to form a box.

Eating for Working.

The importance of this matter is far too little appreciated or understood by the great majority of farmers. Many who carefully consider what kinds and quantities of food, of oats, corn, ground and cut feed, hay or grass, will enable them to get the most good work out of their horses and oxen, the richest milk, or largest amount of it, from their cows—also the best times of feeding—sadly neglect to use similar thought and care respecting themselves and their workmen. The foreigner working a New Jersey farm, in explaining how he got together money enough to buy it, said: "We sells every ting that brings de cash; what wont sell, we feeds to de hosses; what de hosses don't eat, we feeds to de cows; what de cows don't eat, we feeds to de sheeps; what de sheeps don't eat, we feeds to de pigs; and what dey don't eat, we eats ourselves." This is an exaggerated statement, of course, but it illustrates a principle too often followed—selling the good and eating the poor.

Strength comes *only* from suitable nutritious food, well digested. A man, whether employer or employed, will have far more working power if he eats as much, and only as much, as he can digest well, of lean meat, properly cooked, good bread, oat-meal, ordinary and curd cheese, and the like, than if consuming salt fat pork, cooked almost to a crisp, with potatoes, etc. A laborer paid a dollar or more a day, will do double real work if 5 to 10 cents extra be spent in supplying him with food that will give him the fullest strength. Beans, if not charred or browned in cooking, peas, green or ripe, good bread, and cabbage thoroughly cooked, supply the elements for muscular force.

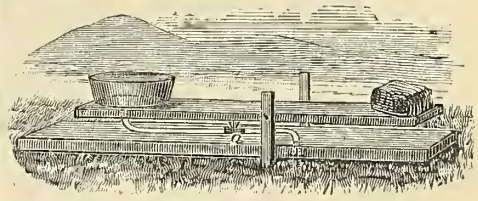
The blood is the active helper in digesting food, by supplying the gastric solvents, and it carries nourishment to the muscles and to the brain. While a heavy meal is being worked up, the blood is drawn away from the muscles and brain to the stomach. When at hard work or exercise with mind or body, the blood is drawn from the stomach, and less nutriment is obtained from the food. It is a good rule to work slowly at first, after full meals, and increase the amount of exercise gradually, as the blood can be spared from the digestive organs. More will be accomplished by this course in working and thinking. The French people, who make a study of the subject, take a very little food on rising, a roll and coffee, and perhaps a baked apple, and begin work at daylight. Towards noon they take another similar simple repast, and do a full day's work by 4 o'clock in the afternoon; then rest a little, take a full hearty meal, and make a business of digesting it. During the rest of the evening and night, this meal is digested, diffused all through the system, and quietly builds up and strengthens the muscles, so that they are ready for vigorous work the next day. Experienced horsemen understand that with a heavy feed of oats, etc., at night, and a light breakfast, a horse gets a reserved stock of muscular strength laid in in advance, and will travel faster and further than one having a hearty morning feed to start on.

Are Lunches Bad?

Alternate activity and rest is a law of nature, for every part of the body except the heart and blood vessels, and for the mind also. This law can not be violated without more or less harmful results, whether they are noticed or not. The human stomach must have periods of rest, or it will weaken and finally fail. It is in one sense the gristmill that supplies the whole body with nutriment. The mill keeps to work as long as there is anything in it to grind. An ordinary heavy meal requires 4 to 5 hours for being dissolved, and sent out to the system; in weak stomachs more time is needed. Then the stomach wants quiet and rest of at least an hour or two to recuperate itself, during which the other parts of the body and the mind may be active. As a rule, not less than six hours should intervene between meals. A lunch of any kind, even milk itself, if put into the stomach before it has disposed of the previous meal, *and rested*, is harmful. Lunches between meals, nibbling at cake, candy, fruit, at anything that must be digested, keeps the stomach at work, and robs it of rest absolutely needed. Even beer and sugared drinks have to be digested. The feeling of faintness, of "gone-ness" experienced in the hay or harvest field, usually comes from the disturbance of a hearty breakfast or dinner that, by reason of hard work and depressing heat, is still undigested. The lunch quiets it, but partially unfits the stomach for attacking the next meal; the best way is to do without the lunch; stop work when too weary to go further, and rest at least 15 or 20 minutes before taking food; then rest a little more, and gradually push on to one's full measure of strength. Attention to these matters will wonderfully increase the amount of work, mental and physical, which one can accomplish during a year, or series of years.

Self-Acting Chicken Trough.

When water can be brought in a pipe from a spring or other source having a little higher level, it is convenient to have a simple apparatus to regulate the flow of water without giving it personal at-



tention. Among the various methods of accomplishing this we present the one above. A plank or board lies upon or near the ground. Above this another board is held on a wooden or iron bolt between two stakes. On one end is placed a stone of suitable weight; on the other end a water-pan of any convenient size and form. A small lead or iron pipe, which need not be over a quarter-inch internal diameter, comes up from the ground, runs between the boards or planks, and enters the water-pan. This pipe is separated at *a*, and a short piece of moderately thin India-rubber pipe is put on. Over this a piece of wood with a pointed lower end is fastened to the upper board. The stone weight can be so adjusted that when the water-pan is filled or partly filled it will press this point down upon the rubber and close it. When the water diminishes that end will rise and let in more water.

What a Pint of Manure Did.

A Wisconsin farmer sends this experience to the *American Agriculturist:* "Last year, in hauling yard manure across a field afterwards planted to corn, some of it scattered off in driblets, from a handful to a pint or so in a place. When planting the corn, I found portions of these droppings, and where noticed, drew them into the hills, and with the hoe mixed them a little with the soil as the seed was dropped. In three instances, where a large handful or about a pint of the manure was thus put in, a stick was driven down to mark the hills. When hoeing, we noticed that in these hills the corn plants had started off more vigorously, were greener, and at the third hoeing they were 6 to 12 inches higher than the other hills adjoining. Our curiosity being awakened we followed up the observations, and when gathering the crop, each of the three stalks in all the three hills, had on it two large plump ears, while the surrounding corn did not average one good ear to the stalk."

Thinking and Figuring.

"This set us to thinking and figuring. That bit of manure had given the young corn roots a vigorous start, just as good feed starts off a young calf, or pig, or lamb, and the roots penetrated further in every direction and gathered more food and moisture. These stalks being better nour-

ished from below, ran far away from the poorly fed neighbors.—As to the figures, the rows were 3½ feet apart, and the hills 3 feet distant in the rows, say 4,000 hills on an acre, and 4,000 pints of manure is about 62½ bushels, or two large wagon loads. Anybody can reckon the difference between six large, well-filled ears of corn on each hill, and less than three per hill, and the cost of the manure as compared with the total value of the final crop. The plowing, and the seed, and the hoeing, amount to the same in each case. All I have to say is, that every corn-hill planted on my farm this year will have at least a pint of manure in it....."

Egg-Eating Hens.

It is a serious drawback upon the profits of the poultry yard when the hens eat the eggs, and this is generally brought on in their confinement in summer, to which most villagers and some farmers have to resort. This seldom occurs in flocks that have their liberty. In this case, as in many another, an ounce of prevention is worth a pound of cure. The craving for animal food is met by the great numbers of insects in the summer. With a supply of grain the flock at liberty gathers enough animal food. If cut off from it, it must be supplied in their confinement. The maximum production of eggs cannot be kept up without it. One of the cheapest and most effectual sources for those who keep a cow is skimmed milk. All kinds of poultry become very fond of this, and with green food and grain will do fairly well in a large yard. Other sources of supply are butcher's offal, fish offal, and chandler's greaves. Hens finding other animal food respect their own eggs. In obstinate cases the only effectual cure is the hatchet.

What can be Sown in June.

Those who have a time of "making garden" in early spring, and doing up the sowing all at once, do not get the greatest good from their gardens. There are many vegetables of which the season can be greatly prolonged by making successive sowings. A striking example of this is Sweet Corn, which, by judicious sowings may be had every day until frost stops its growth. In many localities, the most thoroughly tropical plants, such as Lima Beans, Okra, and the Melons, do better if put in now than if sown earlier. For succession, after the first sowing, put in Bush Beans, Beets (allowing plenty to be used as beet greens), Cucumbers, and other pickle plants. Carrots, Kohl Rabi, and Salsify, are among those that may still be sown and make a crop before frost arrives.

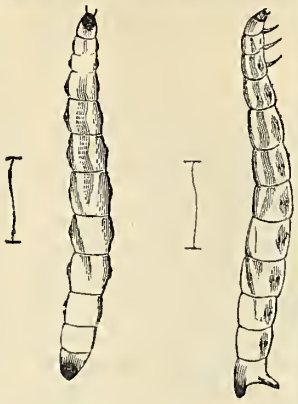
Cucumbers—Melons—Squashes.

DESTRUCTIVE INSECTS—REMEDIES.

Every one with much gardening experience knows that to succeed with any of the Gourd Family (which includes Cucumbers, Melons of all kinds, and Squashes, early and late), there must be a constant fight with the insects which especially attack these plants. One of the best known of these is the "Striped-bug," or properly "Striped-beetle" (*Diabrotica vittata*), (fig. 1.) Gardeners have learned that by far the best treatment of young cucumber and melon plants is to place over each hill a frame of boards, 12 or 15 inches square, 6 or 8 inches high, the top of which is covered with millinet, mosquito-net, or some similar fabric. These boxes shelter the young plants from cold winds, and their slight covering will prevent injury from a chilly night, and even from a slight frost; besides this, they keep off the Striped-bug until the plant outgrows the frame, and is large enough to not be seriously injured by its attacks. After awhile the Striped-bugs diminish in numbers, and the cultivator congratulates himself that all will now be well; but here and there his vines soon begin to wilt, and perhaps die. If he carefully takes up the wilting vine and examines the root, he may find the reason for its flagging: numerous

Fig. 1. STRIPED CUCUMBER BEETLE.

worms (fig. 2), nearly half an inch long, about as thick as a good-sized pin, whitish, with a blackish-brown head, feeding at the root. This, which does so much damage at the roots, is the grub state or larva of the same Striped-beetle, so destructive to the tops of the vines. When the beetles disappeared, they had provided for another brood by laying eggs near the surface of the ground, from which come these "worms" at the root. The grubs complete their growth in about a month, form a chrysalis in the ground, and after two weeks come out as perfect beetles to continue their mischief. It will be seen that the destruction of every Striped-beetle by hand-picking or by any other means, will be a great gain, not only as regards the injury that it may do as a beetle, but in preventing the underground work of its progeny. A relative of this common Striped-bug, but with its marks in spots instead of stripes, is found in some localities, and it is equally destructive.



BACK VIEW. SIDE VIEW.

Fig. 2.—LARVA—MAGNIFIED.

In some Western and Southern States, great damage has been caused by what Prof. Riley calls the "Pickle Worm." This is the caterpillar or larva of a handsome moth (fig. 3,) (*Phacellura nitidalis*). Its yellowish-brown wings have an iris-purple reflection, and the fron wings have an irregular, semi-transparent, dull golden-yellow spot. The larva (fig. 4,) is yellowish-white, tinged more or less with green, and has numerous shiny, slightly elevated spots, each of which bears a fine hair. Its length is about half an inch. These bore holes in the young cucumbers and melons, often causing them to rot. Several are often found in one cucumber. As they have been sometimes found in cucumbers after they have been pickled, the name Pickle Worm has been given to the larva. Thus far, this destructive insect has only been found in a few localities. The vines should be carefully watched, and all infested fruits cut at once and fed to the pigs or destroyed, in order to prevent a second brood.—Very destructive to Squashes and Pumpkins, and occasionally to other vines of the family, is the "Squash-bug"—in this case properly called "bug," as it is not a beetle, but belongs to the true bugs, as the Bed-bug, Chinch-bug, and other unpleasant insects. This Squash-bug (fig. 5) called formerly *Coreus tristis*, but the later works give it as *Anasa tristis*. It is a little over half an inch long, of a rusty-black color above, and dirty-yellow beneath; it gives off, when disturbed, an odor that has been described as like that of "an over-ripe pear." We never met with a pear so "over-ripe" as to have this odor, which is one so sickening that few persons will care to test it more than once. These insects pass the winter hidden in crevices, in fences, and other places of shelter, and near the end of June, or early in July, they make their way to the squash vines, where they mate. They are quiet during the day, remaining on the ground or on the stems of the vines, but at night they are busy in gluing their brownish eggs in little patches to the underside of the leaves. The eggs soon hatch, and the young insects, paler in color and more rounded in shape than the old ones, stay together for awhile upon the same leaf; but as they change their skins and grow larger, they scatter upon the leaves of the vine, which they puncture, and from which they draw the sap, soon causing them to wither and die. In September and October, they reach their full size, and then seek a place in which they may pass the winter in safety. There is scarcely any destructive insect with which hand-picking at the right time is so effective as this, and it is not difficult to keep them in control if properly attended to. When they first appear, the vines are small, and the parent insects may be found upon them or on the ground close by, and are easily caught. Next the eggs should be looked for, and being in patches are easily crushed by the thumb and finger; if the eggs escape, the young will be found in clusters for awhile, and they are then very readily destroyed. If proper care be taken, there is no reason why any should escape.

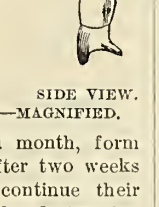
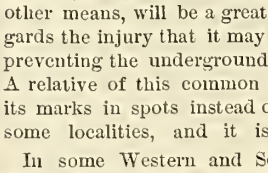


Fig. 5. SQUASH-BUG.

It is very important that every cultivator should understand the habits of destructive insects. There is a time in the life of most of these pests, when they may be most effectively destroyed, and in many cases, hand-picking is the best remedy.



3.—MOTH OF PICKLE WORM.

Fig. 4.—LARVA OF PICKLE WORM.

Pruning in June.

We have tried pruning in almost all months of the year, and on the whole prefer June. This being about the busiest month of the year, there is usually little time for pruning, and so the favorite time is early in spring, and many of our old orchards, in their rotting limbs and decayed trunks, bear testimony to the mischief wrought by the ill-timed use of the saw and axe. Small limbs, an inch in diameter or less, can be taken off at any time with comparative safety. But the thorough pruning called for in a long-neglected orchard is best done in the early summer. The sap is absorbed by the rapid formation of wood and leaves; the wood laid bare in pruning large limbs soon becomes seared, the healing process around the edges of the wound begins immediately, and in a few years the wound will be completely covered with new wood and bark. There is no chance for decay as when large limbs are removed in the early spring. There is far too little pruning done in the farm orchard. A dead limb should not be suffered upon the fruit tree. Good pruning leaves no stubs, but cuts close to the trunk or branch to which the pruned limb is attached.

How to Get High Prices for Fruit.

The much-quoted saying of Daniel Webster regarding the legal profession: "There is always room at the top," applies also to fruit selling. No matter how abundant the supply of any fruit, or how much the market may be "glutted" with strawberries, peaches, pears, or apples, while common fruit will be of slow sale at any price, that which is a little larger, finer, or better colored, will always sell and at good prices. In cities there are many wealthy persons who do not care for the price if they can get what they want. We saw recently a basket of hot-house grapes that had been sold for $5 per lb., and at the same store forced peaches were sold at $1 each. Of course these are extreme prices, but they prove that there is a market for the fine and unseasonable. We mention them to show that "there is always room at the top." The fruit grower who produces the best is not only sure of a sale, but at prices far above those for common fruit. How can the best fruit be grown? will be asked. If the grower of cabbages should try to take a crop from the same soil

year after year, without applying manure, he would fail, and every one would laugh at him. Yet a fruit grower will carry off a crop, year after year from his orchard, without returning anything to the soil, and thinks that varieties have run out. Manuring the orchard is the first step towards good fruit. The next is thinning. In March last it was shown by an article from a correspondent, where fruit from peach-trees that had been thinned brought double the price of that from unthinned trees. This increased price was paid because the peaches were larger and better. And the same holds good with pears and apples. "But it is too much trouble to thin the fruit on an apple-tree." Then don't do it. But *is* it too much trouble? Try it on a single tree. After the fruit has fairly set, go over the tree by means of step-ladders, and remove two-thirds of the young apples; keep an account of the cost, and at harvest-time an account of the returns from the fruit from this tree. It will then be easy to determine whether it pays to thin or not.

Insects on Garden Vegetables.

In some localities one or more of the Cabbage Worms is still troublesome. The most common of these are the caterpillars of medium-sized butterflies, the wings of which are white, with a few black spots; there are three distinct species, but all are similar in their habits. Wherever these butterflies are seen flitting about over the cabbage and cauliflower plants, trouble from "worms" may soon be expected. Safety consists in attacking them early. Some worms eat into the forming head, and when they have thus hidden, nothing can be done. In small gardens, hand-picking will answer, but where there are many cabbages, this is not practicable. The Persian Insect Powder, the *Pyrethrum*, is the best, and a safe application (see article on its use on page 252). In former volumes we have given the experience of those who have successfully used hot water, to reach the plant at the temperature of 160°. There are in some localities cabbage worms which come from other butterflies, but they are to be treated in the same manner. The large green caterpillar, of the 5-spotted Sphinx, known as the "Tomato Worm," is most destructive; it will soon leave nothing but bare stems upon a tomato plant, eating the green fruit as well as the leaves. When the tomatoes are supported by some kind of a trellis, as they always should be in a garden, worms may be detected by the quantity of large pellets of droppings found upon the ground. Where these are seen, the worm should be sought for. Stems without leaves also indicate its presence. When not eating, it will be found close to the stems, on their underside, and as it is of nearly the same color, may escape notice. The "worms" are never very numerous, and hand-picking is the best way to deal with them. In spite of the horn at the tail-end, they can neither sting nor bite. Frequently one of these will be found with its body nearly covered with small egg-shaped white cocoons, often mistaken for eggs. Worms with these should not be destroyed, as they are too weak to do much damage, and the parasitic insects should have time to leave these cocoons, as they are our friends, and should be encouraged. The Tomato-worm may sometimes be found on potatoes.

Transplanting.

This month and next there will be much transplanting from the seed-beds of late cabbages, celery, and other plants. It is the custom with many to wait until there is an indication of rain, and thus hurry up the work in order to take advantage of cloudy and wet weather. This is well enough, though by no means necessary. In transplanting, as much depends upon taking up the plants as upon setting them out, and if both these are properly done, we need not wait for a rain. In taking up plants from the seed-bed, we wish to preserve as many of the fine fibrous roots as possible; hence the first step is to water the bed, in order to soften the soil and thus prevent breaking the roots. Have at hand an old pan or other vessel, in which there is some rich loamy earth mixed with water to form a mixture like thick cream or thin batter; keep this well stirred and as the seedlings are taken up, draw their roots through this until they are thoroughly coated. In taking up the plants, they should be examined; cabbages and cauliflowers, for example, often go "blind," as gardeners say—that is, the growing bud becomes obliterated; these will never form a head, and should be rejected with those that have malformed roots or crooked stems. With the roots thus protected the seedling plants may remain for several days, if anything prevents setting them. It should always be done with plants that are to be sent to a distance. On a large scale, market gardeners depend upon rapid work and on keeping the plants constantly wet. In putting out the plants, the dibble is generally used. This is a stick an inch or so through, about a foot long, and with a convenient handle, usually the natural crook of a branch of some hard-wood tree. The dibble is pushed into the soil to make a hole, the plant is put in, and then the dibble is thrust in again near the plant, and with a sidewise movement the earth is crowded up firmly against its root. When the dibble is again withdrawn, some of the surface soil is pushed in to fill the hole it has made. To make sure of close contact of the earth with the root, the planter usually goes over the row and presses the soil with his feet. In setting cabbages, cauliflowers, and other plants that make a stem, they may be put an inch or so deeper than they were in the seed-bed. Those which, like celery, have no distinct stem, should be set no deeper than they were before.

The Lawn in Summer.

In the spring months, when there are frequent showers, and the grass is in rapid growth, the lawn-mower may be used as often as once a week with decided benefit. But in our climate, with its extremes and uncertainties, such fixed rules, as "mow once a week," will lead to trouble, if followed. With the first drouth the grass on the lawn shows a diminished growth, and is often really at a stand-still. At such times, nothing worse can be done to the grass than to cut it. All that there is above ground is needed to sustain the root, and incidentally to shade the surface. In the treatment of the lawn, as in all other gardening operations, some thought should be given to the present condition of the plants, and the object to be gained by any operation. The kind of grass varies the time or frequency of cutting. A fine, thick bottom-growth of June-grass, or Blue-grass, may be kept pretty closely shaven. But many front yards and lawns have a Timothy or Herd's-grass sod, and if this is allowed to grow 8 to 12 inches high and then cut, it will leave a woody stubble, and if dry weather prevails, it will be a long time before a new growth from the roots comes up, the plot in the meantime having the appearance of a burned-over surface, or a dry stubble at best.

Take Care of the Sashes.

The sashes of hot-beds and cold-frames meet with more injuries while out of use than during real service. When the weather no longer requires them upon the frames, they are usually left with one edge resting on the rear of the frame, to be ready if a sudden cold spell requires them to be put on again. Many years ago we left our sashes thus, but one day, hearing a sudden noise, we looked out in time to see our whole stock of sashes up in the air. A sudden whirlwind had passed over, and took them up as if they were sheets of paper. The going up did not injure them; it was the coming down that was costly. Even a less violent wind than a small cyclone will overturn and damage sashes, if left in this manner; and they are liable to injury from other causes. It is safer to always stack them at the ends of the frames, laying down a couple of pieces of scantling to keep the bottom one from contact with the ground, and place them evenly one upon another, putting the shutters at the top. Even when thus placed, it is well to put a log or heavy bit of timber on top, to prevent a violent gust from displacing them. If a sudden change of weather makes sashes necessary, they will be at hand for use, and the slight labor in stacking them will be more than repaid in the saving of glass.

Which is the Best Garden Label?

Is a question that has for some time exercised our friends across the water. When the "Society of Arts" proposed an exhibition, at which premiums were to be awarded, we felt that we should have something conclusive. The exhibition was held, but premiums were not awarded, and exhibitors were told to try again. What is worse, the label question has broken out in the papers more profusely than before. In all this uncertainty, we congratulate ourselves on the fact, that for all trees, shrubs, and plants that remain in place year after year, the very best is *No* Label. Of course, with temporary plants, at least until we get well acquainted with them, we must mark them, and for this a permanent label is not needed; but for all other things, a record is simpler, and answers even better than the best label. This should be made in some permanent form, to be kept in the house for safety, while a copy in a memorandum-book may be for ready reference. Fruit trees and plants are usually in rows, and to make the record, we have only to rule a piece of paper with perpendicular and cross lines to divide it into squares. Number the tops 1, 2, 3, etc., for the rows; at the left-hand side number in the same manner for the trees in the row. As the squares stand for trees, they must be marked; they may be large enough to write in the name, or some understood abbreviation of it; as, "Bal.," for Baldwin Apple; "D. A.," for Duchesse d'Angouleme Pear, and so on. Or where the varieties are not very numerous, each may have a number; let No. 1, wherever it may occur, stand for Early Harvest Apple, or for Bartlett Pear. Either method is simple and easily carried out. If one would know the name of the 8th tree in the 4th row, he has only to run down on the 4th row of squares until he meets the 8th row on the side, and there he should find a sign to tell him the name of the tree. If one must use labels upon trees and shrubs, the simplest we have found is sheet-zinc, cut in the shape of a long triangle. Let it be 6 or 8 inches long, an inch at the broad end, and taper to a point. Write upon it, near the large end, with a common lead-pencil; coil the small end around a twig; it will expand without injuring the tree, and last for 20 or more years.

Injuring the Asparagus Bed.

Much harm may be done by continuing the cutting too long. The fact that shoots continue to be produced, should not tempt us to appropriate all that grow. The shoots we have been enjoying this season all came from strong buds, formed at the crown of the root last summer. If we want a similar crop next spring, we must give the plants a chance to prepare for it. This production of new shoots as fast as others have been cut, has more or less exhausted the plant. It can only recover by the help of the green tops. Allow these to grow, and they will not only repair damages, but prepare a stock of buds to afford new shoots for next year. Near New York City the cutting stops early in June, the usual rule being to cease when early peas are ready.—In this country it is customary to cover the bed, before the ground freezes, with coarse manure; in spring the coarse stuff is raked off and the fine portions forked into the surface, taking care to not injure the roots. Some English growers have found it beneficial to apply manure dressing as soon as the cutting is over. Nitrate of Soda, dissolved in plenty of water, and applied, has given most excellent results, and some advise using as much as 2 lbs. to the square yard. This seems to us rather heavy, and we advise to experiment at first with half that quantity. Inland, beyond the influence of the sea, good results have followed the application of salt, not to exceed 5 bushels to the acre. The weeds which start in the bed should be cut away with the hoe until the

plants get large enough to shade the soil, when the pulling up of any large weed that may appear in the ground will be all the care the crop required.

Provide the Sweet Herbs.

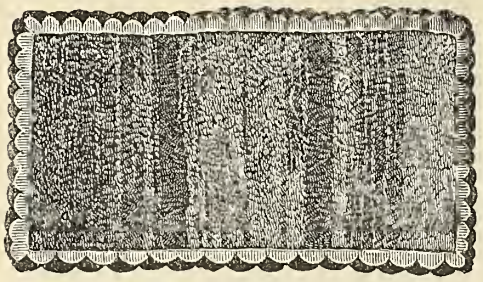
There are many things that are not food in themselves that help give a pleasing variety to foods; these are classed under the general term of condiments. These may be mere flavorings, or may be added to help the digestion. Thus the Mexican lives largely upon *frigoles* (pronounced *free-ho-lees*), the common bean of the country, which is present at every meal of the richest, as well as forming often the sole food of the poorest. These are made to form a great variety by the seasoning; they are dressed with green pepper or red, with cheese or with garlic, and in other ways. With us the use of condiments is not a necessity; they are employed to give a pleasant flavor to articles of food. The plants called Sweet Herbs, comprise Sage, Thyme, Summer Savory, and Sweet Marjorams—sometimes Sweet Basil is added to the list, and Parsley, used mostly in the green state, may be classed here. A bed or corner of the garden may be used to raise the young plants, which can be set out after early vegetables are off. They are best treated as annuals, though Sage and Thyme will live longer than one year. They grow most luxuriantly in late summer. The plants should be cut when in bloom, tied in small bunches, and hung up to dry; they may be preserved in this state, or when quite dry be rubbed with the hands into a coarse powder, to be preserved in bottles in a convenient form.

Plants for Pickles.

A correspondent asks us to give a list of the plants used for pickles. To do this, we should be obliged to enumerate almost every vegetable that is grown, for nearly every one that will serve as a vehicle for vinegar, has been used for the purpose. The universal pickle is the Cucumber, and is used when the size of the little finger, up to nearly table size. Our favorite pickle is the Martynia, which should be sown this month, the pods of which, taken early enough, make one of the best pickles. Nasturtiums, or Indian Cress, are grown for the purpose. These may be sown now, and if given some brush to run upon, will give an abundance of their peppery, unripe fruits. Peppers may be set out this month; the Squash-peppers, with thick flesh, being pickled by themselves, and the large Sweet Mountain kind, used for stuffing. Besides those plants grown especially for pickles, many others are used, such as String-Beans, Cauliflowers, Melons, when unripe, Onions, Cabbages, and Green Tomatoes. Over-ripe Cucumbers are much used for sweet pickles. An excellent pickle may be made with cabbage, onions, cucumbers, and green tomatoes, about equal parts, a smaller proportion of green peppers, and after chopping and mixing all together, treating as sweet pickle. We hope to say something in season about the manner of preparing the pickles, and of the method of pickling Martynias.

Inexpensive Home-Made Mats.

A firm, durable mat, of any size desired, more or less ornamental, and quite inexpensive, may be made as follows: In a capacious bag placed out of sight in a closet, deposit all good remnants from the family sewing, bits of gay colored flannels, cashmeres, pieces of old woollen coats, pants, etc. From time to time, when too weary for other work, and the eyes are too tired to read, cut these materials into strips, as for rag carpet, and sew them together, and wind in balls. When enough material has accumulated, with large wooden needles, such as are used for knitting shawls, knit these rag strips back and forth into mats of any desired length and width. A variety of effects can be produced by sewing together and winding on separate balls the strips of the same color and knitting them in color bands; or they may be so thoroughly mixed as to give a mottled surface. If the cutting and sewing be done somewhat evenly, the surface of the knitted mat will be quite smooth, and the mat itself firm and lasting. It can be finished with a border of home-made fringe; or with a strip of two shades of cloth cut into scollops, one strip extending a little beyond the other, as seen in the engraving. This is made from a photograph of a mat 15 by 32 inches, which we obtained for this purpose from a lady in whose house we saw quite a variety of them,

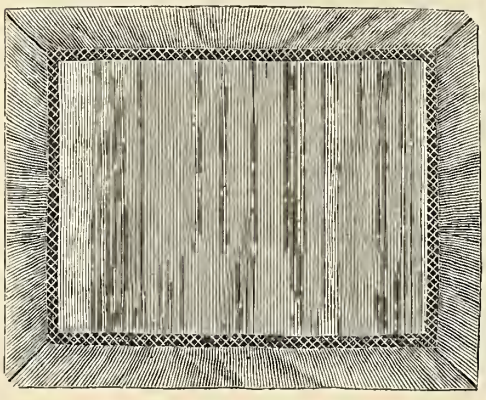


A HOME-MADE FLOOR MAT.

in front of wash-stands, commodes, etc., of different sizes and shadings. We learned that she adds one or two each year, without any real loss of valuable time, or any expense. Some of these mats, after being long used, appeared as good as new.

An Economical Table Cover.

By the following method a simple, cheap, and yet very pretty cover for a table or stand may be quickly made. The engraving herewith is photographed from one of these covers that we borrowed from a lady who has several of them of her own make, which attracted our attention. A heavy double-faced canton flannel is now manufactured, in a variety of colors, having the nap on both sides, and it is on sale generally. Either this or the single-faced can be used, but the double-faced is preferable on account



A CHEAP AND PRETTY TABLE COVER.

of its extra thickness. The shade can be selected to match the furniture. When cut to a suitable size, it is bordered with a contrasting shade of the same material of any desired width. But this is best made of the single nap flannel, as the double would be a little clumsy. The border is cut of double width and folded so as to leave the fold for the outside edge, and stitched on. To cover the seam, sew on a strip of velvet or velveteen with cross or feather stitch of filoncelle, of contrasting shade; gold is preferable. This comes in all colors and costs but little, and each thread can be split into two or three threads.

Drinking in the Hay-Field.

Men in health perspire freely when vigorously at work on warm days. Very heavy sweating may sometimes arise from weakness; a dry skin may indicate disorder. Evaporation from the surface carries off heat and keeps the body cool. A larger supply of drinking water is required for the warm haying and harvest days, but much less than is commonly supposed. Half a pint of water, sipped slowly, will assuage thirst much more effectively than a quart gulped down. As fully explained in the chapter on "Catching Cold" (in December No.), a different temperature in two adjacent portions of the body produces congestion. A pint of cold fluid of any kind, thrown into the stomach, may result in more or less congestion; serious illness, and not unfrequently deaths, arise from this cause. If ice-water is taken at any time, it should always be swallowed so slowly that the stomach can warm each gill before another is received.

As to the kinds of drink, the positive teachings of medical science, and experience, indicate that pure water is by far the best fluid for assuaging thirst, and supplying the wants of the system. Beers, ales, sweetened drinks, or any fluid that contains material that must be digested, are a tax upon the stomach, and tend to disorder the system. If taken at all, it should be only *with* other food. Pure water is absorbed at once into the blood, and is carried directly to those parts of the body where it is needed. If the water is bad, it may usually be corrected by the addition of a little ginger, or ginger extract; too much of this produces constipation; but on this account it may be used more freely in looseness of the bowels. All alcoholic drinks are unhealthful for one in active exercise. They stimulate increased effort—effort beyond one's natural strength—and unnatural exhaustion inevitably follows. Just so far as any one raises himself above a normal condition by alcoholic stimulants, just so far below this condition will he surely sink a few hours after, and the elevating and depressing operation wears upon and disorganizes the machinery of the body.

The Late Planting of Corn.

There is quite a difference in the practice of farmers in the time of planting their field corn. In the Eastern States some begin to plant the last of April or early in May. Of course the corn is a long time in coming up, some of it rots and has to be planted over, is more liable to be pulled by crows and other birds, and the ground requires more cultivation to keep down the grass that gets a good start in May. With the varieties of corn that mature in a hundred days or less, there is no need of this early planting, but a possible gain in waiting for summer to grow this tropical crop. One of the best farmers of our acquaintance plants corn on the 6th day of June, or as near that date as possible, and has followed the practice with uniform success for many years. His ground of course is heavily manured, and thoroughly worked beforehand. The corn is up in about a week, and is cultivated soon after. The ground is warm, well drained, and the plant pushes along rapidly to maturity. He claims for his practice that he gets as good corn, and corn fodder, as the early planting would give him, while he saves labor, and avoids the danger of the seed rotting in cold wet soil.

Feeding Experiments With Hay.

Our readers will be greatly obliged to Prof. Jordan for his interesting statement (p. 249) of the results of his own and other experiments on the amounts, composition, and respective values of hay cut at different periods of growth. As Prof. Jordan says, however, in addition to weighings and analyses of the produce, more feeding trials are needed to settle the question. Mr. J. W. Sanborn, Farm Superintendent of the New Hampshire Agricultural College, to whom Prof. Jordan refers, has recently been engaged in feeding experiments with hay cut at different periods of growth. His first results (not yet published), which we understand have been supported by further trials, favor a somewhat later cutting of grass than the experiments referred to by Prof. Jordan would lead us to think most profitable. In short, to cut hay during blossom, but at the full blossom, or a little later, seems to be the best period according to Mr. Sanborn's experiments.

Some Apple Insects.

"Why do you say so much about insects?" some may ask. The question shows that the querist has not reached the proper state of mind to be a successful fruit-grower. Unless one accepts the fact, that he must keep up a constant fight with

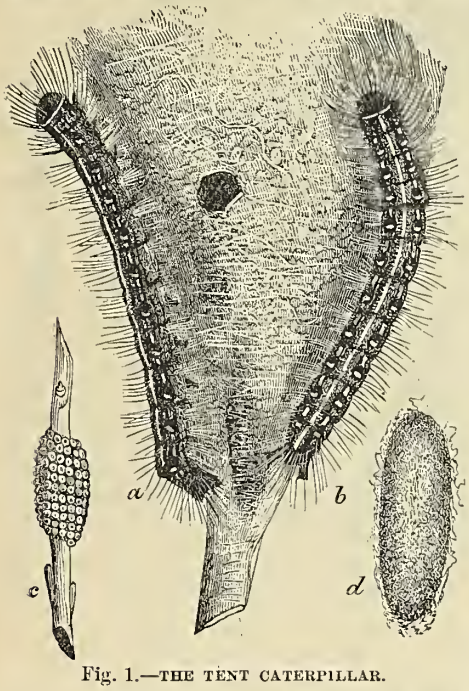


Fig. 1.—THE TENT CATERPILLAR.

insects, he will not have much "luck" with fruit, whether small fruits or those of the orchard. With respect to insects, endeavor to interest in, and secure the co-operation of the neighbors. One working by himself can do much, but vastly less than when his neighbors work with him to the same end. If there were a gang of fruit thieves in the vicinity, the neighbors would at once unite to get rid of them. Thousands of small fruit thieves, the insects, are always committing depredations, and it will *pay* to unite against them. Nowhere is the wisdom of the injunction, "Resist Beginnings," more strikingly shown than in dealing with insects. A single female insect killed now, will prevent the birth of myriads. It is not necessary that every fruit-grower should be a trained entomologist, but he should know all his insect enemies at sight, and understand their life-history, know their different stages and mode of living, that he may most effectually destroy them.

THE TENT CATERPILLAR.—There is more than one, but we now refer to that often called *the* caterpillar of the orchard, and which, if left unmolested, soon strips the leaves from the trees. While this is one of the most destructive of the

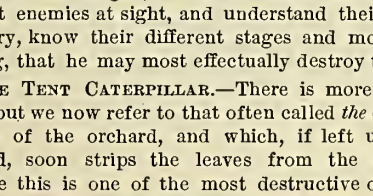


Fig. 2.—THE MOTH.

orchard insects, it is also one of the most easily subdued. The clusters of its eggs, *c*, in fig. 1, are always near the ends of the twigs, and may be readily seen and removed at any time when the tree is leafless. It is, of course, too late for this now, as the caterpillars have hatched, and have already begun their webs, or nests. They commence to spin at once, placing their "tents" at the forks of the small branches. All the caterpillars from one cluster of eggs join in weaving the web, in which they live together, and increase its size as their growth demands. The tents are not only conspicuous signals that the enemy has encamped, but they afford a ready trap for its destruction. One writer has said that the presence of these in the trees is a sign that a careless cultivator lives on the place. The caterpillars rarely leave the web before 9 o'clock in the morning, and are back again in the evening. Hence one has only to destroy the nest when the occupants are "at home," and make an end of them. The many contrivances in the way of swabs for applying various liquids, and for burning the tents, are of no use. All one needs is his hand, gloved, if desired, and with one grasp the whole colony may be removed, thrown upon the ground, and trampled upon. The engraving shows the caterpillar at *a*, in side view, and at *b*, back view; the colors being varied with white, black, blue, and reddish. They get their full growth in four to six weeks, then leave the tree, and find some fence corner or other hiding place, where they spin a yellow cocoon, (*d*, in fig. 1). In about three weeks, the perfect insect comes forth, a moth (fig. 2), which is generally dull yellowish, or reddish-brown. Its front wings are crossed by two whitish lines, the space between these being usually of lighter color than the rest of the wing. The moth does not feed, the sole purpose of the female being to provide eggs for next year's progeny. The insect is especially fond of the Wild Black Cherry; and while some have advised planting this tree to attract the moth away from the apple trees, others regard it as a nuisance, as it becomes a breeding place for the insects.

THE APPLE WORM, OR CODLING MOTH.—Figure 3 gives a glance at the life-history of this most destructive insect. Soon after the fruit is set, a little brown moth lays one egg at its blossom end; this soon hatches; the worm enters the apple and lives upon its substance, depositing an abundance of excrement. In three weeks the worm makes its growth, and, if the apple does not drop, leaves the fruit, goes down the tree, finds a crevice in the bark, and makes a cocoon. In 10 or 15 days another crop of moths issues, to re-stock the fruit with worms, which proceed in the same manner as

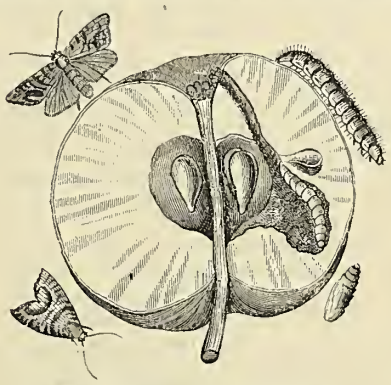


Fig. 3.—THE CODLING MOTH.

before. The worms that come out of the fallen fruit, if the ground is clear of rubbish, go to the tree, crawl up the trunk and find a place to spin. This last brood do not leave their cocoons until the following spring. The remedy is simple and effective. Place around the trunk of the tree a strip of old carpet or other coarse woollen fabric, about 6 inches wide, fasten it with a few tacks; the worms, finding this a convenient place, will take shelter under it and spin. Every 10 days these cloths are to be removed and the insects crushed. Where there are many cloths, it is expeditious to run them through a clothes-wringer and then replace. These traps should be set about the middle of June, and be continued until the last of August.

Raise Your Own Seed Corn.

The time to plan for this is now while the corn crop is going in, or under cultivation. It is a reasonable thing to say that a tenth may be added to the yield of corn on any farm by using seed that has been carefully raised for the purpose. Not much attention is paid to the selection of seed by the average farmer. The man who reads and thinks about the seed used for his crops, selects the best he can find in his crib at planting time, and finds that this pays. It pays still better to select ears from the field the fall previous to planting, from stalks that bear two or more perfect ears. A better practice still is to plant the corn for seed in a small patch by itself, and guard it against all the accidents that must attend its growth and cultivation in the larger field. The ground should be specially prepared for this purpose, and made rich enough to supply all the wants of the plant. It should be thoroughly cultivated every two or three weeks, until the grain is full in the ear. Like produces like, in corn as in cattle, and the silk and the tassel are both factors in giving character to the ear. Though the male and female blossoms in the corn are upon the same plant, there is no security for self fertilization when any plant is grown in the open field. The pollen from a barren stalk may fall upon the ear grown from selected seed, and this ear may be imperfect, or be a cob with little or no corn on it. If the ears selected for seed have been fertilized by a nubbin stalk, the nubbin imperfection goes down to posterity. In a small piece of corn planted remote from other corn we may guard against the accidents of promiscuous fertilization, and secure, as far as possible, corn with a good pedigree, and perfect after its kind. All barren stalks should be cut out, and no more stalks be left in the hill than will give perfect ears. If the owner will select from this patch the earliest and best formed ears, for his seed, and follow up this practice for a few years, he will have a new variety and a large increase in his yield of corn.

State Bounties for the Increase of Forests.

There can be no doubt of the fact, that in most of our older States the forests have been cut off far beyond the requirements of good husbandry. One-fifth of the land, at least, should be covered with wood, to afford protection against the sweep of the winds; to prevent the springs and streams from drying up; to equalize the rain-fall; and to secure good crops upon the soil that is under the plow. A forest to furnish a home for birds that keep down the multiplication of insects destructive to crops, is of far more value than most people have any idea of. Notwithstanding the introduction of coal, and its almost universal use for fuel in our cities and villages along the sea-coast and the line of our railroads, the greater number of our people are so located as to necessarily use only wood for fuel. There is an ever-increasing demand upon our forests for lumber, for ship-building, for railroad-ties, and many other uses. The forests are waning; the streams are reduced in volume; the mountains and high lands are stripped of their wood; and severe drouths are growing more frequent. We are suffering to-day in the high price of beef, of dairy products, and of all the grains, in consequence of the prolonged drouth of last season. This matter is often discussed or alluded to in our Agricultural and other journals, but little has been done to remedy the evil. It affects whole States, the Eastern and Middle, as well as Western, and is already a question of national concern. Our prosperity as a people depends upon the conservation and increase of our forests. One of the best things possible in our circumstances, is the offering of bounties to individuals by our State Legislatures for the planting of forest trees upon the elevated, the rocky, and exhausted portions of our farms. No inconsiderable portions of these farms are so poor, that they do not produce enough to pay the taxes upon them. If they were exempted from taxation, or if a small bounty were offered for planting them with forest trees, the owners would have an inducement to undertake this much needed improvement, and in a few years it would become the fashion to transplant trees, or to sow the seeds upon the waste land of our farms. In many cases, the young trees for transplanting can be found upon the farm. In clearing up a piece of neglected land this spring, we have been surprised to see the large number of young sugar maples, white ash, elm, butternut, dogwood, and soft maple, from one to five years old, that were growing along the brook-side and under the walls, in the best possible condition to transplant.

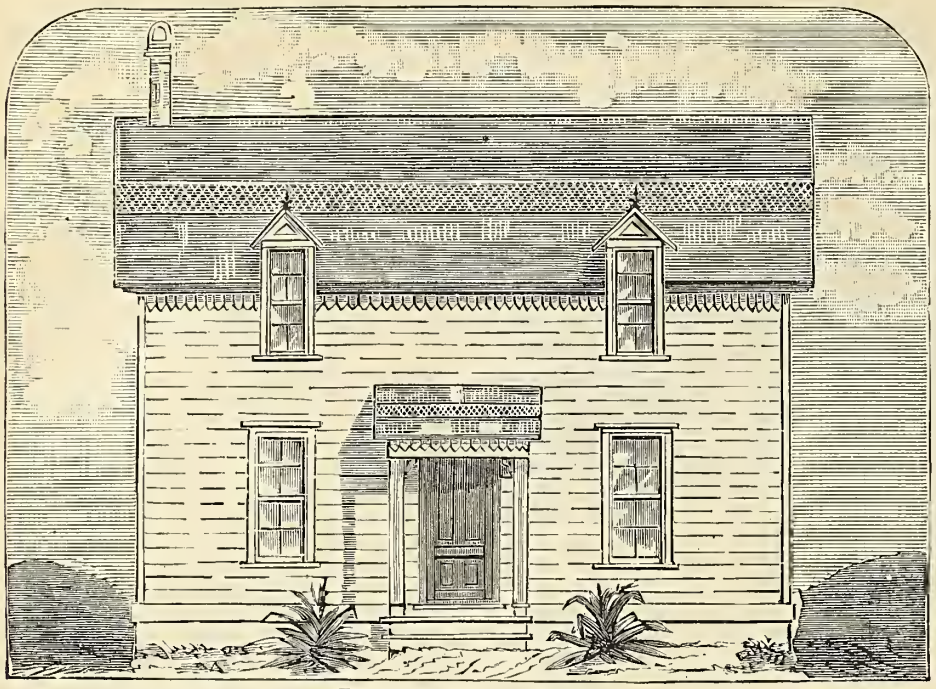


Fig. 1.—FRONT ELEVATION.

Country House, Costing $600 to $800.

(Cost as here Described, $700.)

CLASS I.—SECOND PRIZE.—BY A. C. SWARTZ, GIRARD, KAN.

The envelope "Motto" that designated this plan was: "Poor Man's Dwelling." Mr. Swartz, who claims to be a "practical farmer," took the first prize in the second class, for a dwelling costing $1,900, which was described in the *American Agriculturist* for April last.—The estimates for this house, as given below, make the complete cost just $700. To the elevation plans, as received, we have added some ornamentation, such as laying part of the shingles out of the uniform plain courses; putting the perpendicular pieces with rounded ends upon the cornices, and a few extra moldings and trimmings. The additional cost of all these will not exceed $20, or at most $25, but they very greatly increase the beauty of the architectural appearance, we think.—It is an almost universal

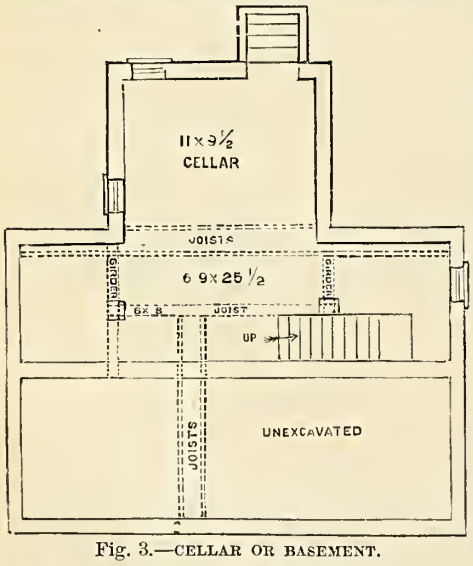


Fig. 3.—CELLAR OR BASEMENT.

fault with at least nine-tenths of all our present country houses, that they have the plainest possible outlines, and no effort is made to give variety, which can be done at very trifling cost. Simply using a few feet more of lumber to enlarge the size of the outside caps and casings of the windows, would materially improve the looks of a great many plain houses. A neat, tasteful dwelling can be constructed at about the same expense as one without any character of its own. Twenty-five to fifty dollars extra on the house itself, with as much more on the surroundings—the grounds and fences—may be so expended as to raise the salable value of a farm many hundreds of dollars. It is important, however, to avoid putting on finical, fanciful ornamentation which is without any special design or harmony, and often offensive to the eye.—The Judges, in selecting this plan for the second prize, on account of the general convenience of the internal arrangements and other features, appended to their award the following criticism, which is an important one: "A house of this cost—indeed, every house—should have some kind of an entry hall, to break the force of winds, and not allow them to directly penetrate the living room whenever the outside door is opened."—The engravings showing the front and side elevations and the cellar, and first and second story floor plans, together with the detailed account of the timber and lumber required, give sufficiently full information to the ordinary builder or carpenter to enable him to construct the whole house, and we need not give much space to a minute description.—The **Elevations** (figs. 1 and 2,) show that little expense is needed for outside ornaments, as the aim is to adapt the cost to those having very moderate means. Every one constructing a house on this general plan will, of course, with the aid of the carpenter, make any desired modifications in the simple parts that constitute the chief ornamentation. In this, as in all other country house plans, we recommend the addition of a covered Veranda along one side, if not on two sides, whenever the small additional expense can possibly be afforded.—The outside covering is of inch boards, put on horizontally, planed outside. The jointing is not specified. We suppose it to be the "Novelty Siding" (fig. 6). The estimates provide for no sheathing under the boarding, of tarred or roofing paper. This should never be omitted, and the cost for a house of this size is only a few dollars.

Basement, or Cellar (fig. 3).—A part of this is left unexcavated. This can be done at any subsequent time, but the old advice given by a farmer to his sons, "Always make your cellar as large as your house," is useful. The cellar room here provided may be ample on a new farm, where only grain and grass will be grown at first, but plenty of cellar room is always handy. A dry cellar under a house conduces to healthfulness. It is always best to place the first floor 2, 3, or 4 feet above the general ground surface, and use the cellar earth, and more if needed, to bank up against the walls in very cold localities, and always to have the ground graded downward from the house outward, so as to quickly convey falling rain away. If the cellar walls are warm enough to keep out frost, it is better to have them extend at least two feet above the graded earth, that windows may admit light to the cellar. If necessary, a temporary banking-up against the walls in winter, may be provided in autumn and be removed in spring.

First Story (fig. 4).—Hight, 8½ feet. The plan is considered a convenient one. Mr. Swartz writes: "....If a fire is desired in the first story bed-room, let the Entrance and the window at its left change places; change the position of the door to the bed-room, and move the chimney over to the wall separating the sitting-room and bed-room, with a fire-place or stove-pipe entrance on each side."...."The entrance from the bed-room to the stairway can be omitted, but is very convenient, especially in case of sickness...." [It will be noticed that the three doors at the foot of the stairs afford a private passage-way from any one room to another, and also from any room to the chamber.] "...The Kitchen Closet can be arranged as a bath-room, if desired...." This closet can be spared, as there is a fair-sized Pantry; but a part at least of the Sitting Room Closet would be required to make the bath-room large enough, unless it extended a little into the corner of the Kitchen.—The specifications and the estimates of cost call for three-coat plastering of the first story rooms.

Fig. 6. NOVELTY SIDING.

Second Story (fig. 5).—The hight of the rooms along the outside walls is 4½ feet. "The partition walls are board or plank, and the rooms are ceiled throughout...." There are four bed-rooms, with a large space around the stairs for

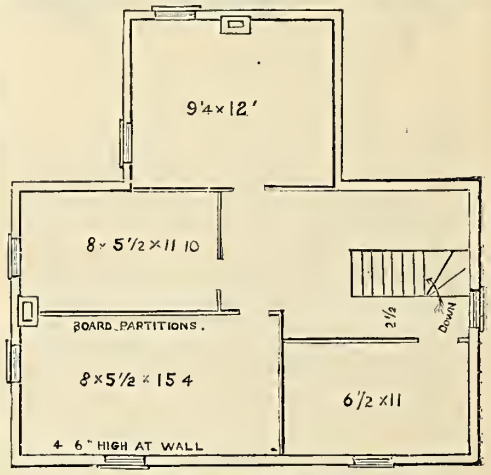


Fig. 5.—SECOND STORY.

storage, which may be utilized for a temporary bed on extra occasions, as when there may be additional help employed at harvest time. The smaller

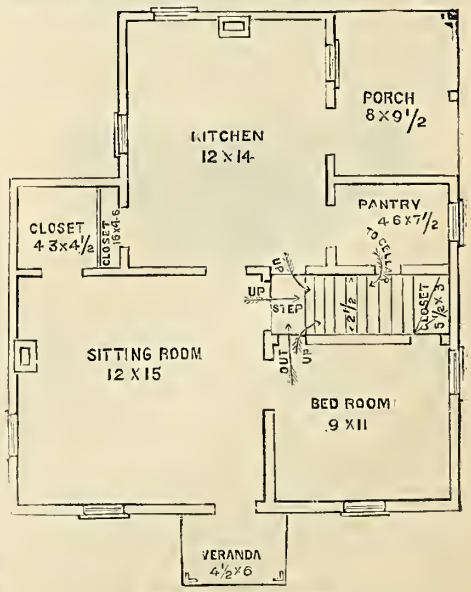


Fig. 4.—FIRST FLOOR.

front room can not be warmed. If the change of chimney, noted above, be made to heat the lower bed-room, this upper room and the larger front one

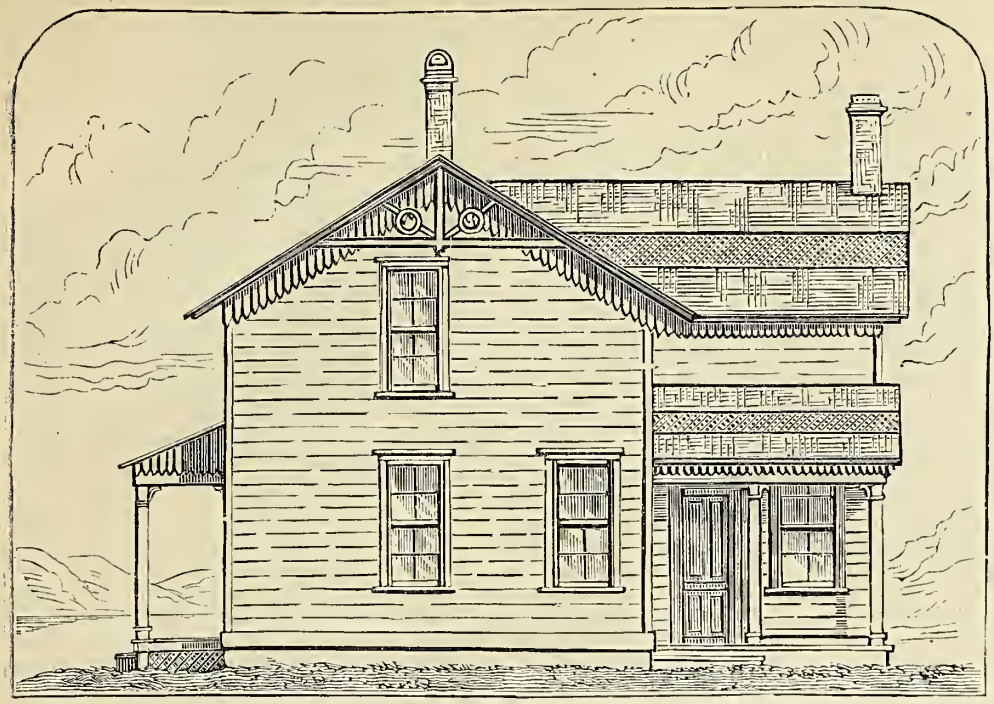


Fig. 2.—SIDE ELEVATION.

can each have a small stove; the rear main story bed-room can be warmed, if needed, by carrying a stove-pipe through the partition to the rear chimney.

Cost.—"The materials and workmanship are to be first-class; the finishing plain throughout. Common labor is reckoned at $1 to $1.25 per day; skilled labor, $1.50 to $2.00."—Labor is now higher than these figures, in most parts of the country.

Estimate of Materials.

Sills, Girders, Posts.	*Studding, Rafters, Etc.*
2 pieces, 6x6 in.x14 ft., 84 ft.	54 pieces, 2x4 in.x 9 ft., 324 ft.
2 pieces, 6x8 in.x14 ft., 112 ft.	4 pieces, 2x4 in.x10 ft., 27 ft.
1 piece, 6x8 in.x15 ft., 60 ft.	34 pieces, 2x4 in.x12 ft., 272 ft.
1 piece, 6x8 in.x16 ft., 64 ft.	48 pieces, 2x4 in.x14 ft., 448 ft.
4 pieces, 6x8 in.x18 ft., 288 ft.	25 pieces, 2x4 in.x16 ft., 167 ft.
608 ft.	6 pieces, 2x4 in.x18 ft., 72 ft.
	7 pieces, 2x4 in.x20 ft., 93 ft.
	1,403 ft.

Joists.	
8 pieces, 2x8 in.x 8 ft., 85 ft.	28 pieces, 2x8 in.x13 ft., 485 ft.
15 pieces, 2x8 in.x10 ft., 200 ft.	8 pieces, 2x8 in.x15 ft., 160 ft.
	930 ft.

Total, 2,941 feet, @ $22 per 1,000 ft.	$64.80
250 feet of 2-inch Plank, @ $25.00	$ 6.25
800 feet of 1-inch Boards, @ $30.00	24.00
700 feet of 1-inch Boards, @ $22.00	15.40
300 feet of 1-inch Boards, @ $20.00	6.00
Shingling, Lath, and Cellar Beams, 103 pieces, 1x4 in. x16 ft., 550 feet, @ $18 per M.	9.90
Flooring, 1,250 feet, @ $27.50 per M	34.38
Board Partitions, 384 feet, @ $23.50 per M	9.02
Ceiling Boards (⅜ths-inch), 1,330 feet, @ $20 per M	26.60
Shingles, 9,000, @ $2 85 per M	25 65
Weather Boarding, 1,540 feet, @ $22.00	33.88
3 Sashes for Cellar, @ 60 cents each	1.80
15 Window Sashes, @ $1.80 each	27.00
2 Outside Doors, @ $2 each	4.00
3 Doors, @ $1.50 each	4.50
7 Doors, @ $1 each	7.00
4 Batten Doors, @ 85 cents each	3.40
Cellar Doors	2.00
73 Yards Excavation, @ 18 cents	13.14
738 Feet Stone Work, @ 6 cents	44.28
1,100 Bricks in Chimneys, @ $11.50.	12.65
187 Yards Plastering, complete, @ 25 cents	46.75
Hardware, etc.—2 Mortise Locks, $2.00;—2 Mortise Locks, $1 60;—12 Rim Locks, $3.60;—300 pounds Nails, $15.00;—64 feet Spouting, $6.40;—5 pairs Hinges, 90 cents;—12 pairs Hangers, $1.50;—2 pairs Strap Hinges, 30 cents;—6 pairs Strap Hinges, 50 cents;—Wire Screen for Pantry, 95 cents;—2 Cupboard Door Springs, 20 cents;—3 dozen Clothes Hooks, 90 cents	33.85
Painting, $60.00; Carpenter Work, $150.00	210.00
Sundry Incidentals..	33.75
Cost of Building complete	$700.00

Notes on House Plan in May Number.—We are promised a Model of the Furnace soon, for making engravings and description. Mrs. Burr writes: "A large trap is placed where the waste water enters the drain-pipe, another under the sink, and one under the bath-tub, and under each wash-bowl, to prevent the return of odors or foul air to the house. As the family consists of only two grown persons and a boy of four, a bath-tub on the first floor was deemed sufficient. Had there been two or three more in the family, a bath-tub would have been put on the second floor. The picture does not look as well as the house, but that, of course, was the fault of my poor drawing sent. There is a wall and door between the Kitchen and Pantry not shown in fig. 2....All sills, plates, girths, and corner-posts, were hewed from timber cut on the farm, and the value reckoned. There are four large chestnut piers, or posts, resting on stones imbedded in the bottom of the cellar...."

Special Notices to Inquirers and Contributors.—Quite a number send us partial plans and descriptions—sometimes only a general statement of their wants and desires—and ask us to publish, or send them, full plans, specifications, cost, etc., of such or such a house. It is impossible to do so. It requires two or three days, often more, to examine, prepare well, and execute suitable drawings for engravers, for any one good house-plan article, and it costs quite a sum to furnish the engravings alone.—We return thanks to those who, from time to time, send us drawings and plans for publication. These are kept and examined as we have time, and if valuable are preserved to be drawn upon in the future, as occasion may serve.

Bee Notes for June.

In all the Northern States, June is the great honey month. The bees are already bringing in this delicious product from the raspberry, the white clover and alsike clover, and before the month ends, the basswood bloom will bring the bees to the great honey harvest of the year. Every bee-keeper should ask and answer for himself:

WHAT SHALL THE HARVEST BE?—Shall we work our apiaries for comb-honey, or plan to get all, or most of it, as extracted honey? This question was recently asked in a meeting of one of the most wide-awake societies of the country, and all but one answered: work wholly for extracted honey. The unanimous opinion was, that nearly double the weight of honey would be thus obtained, which readily sells at 12½ cents per lb., or more, while the nicest comb-honey is only worth 20 cents, the general price being 18 cents. And this is not merely local opinion. Three-fourths of those at the National Convention last autumn, follow this method.—The extracted honey is intrinsically as good as the comb-honey, and is more nutritious. The wax of the comb is neither easily digested nor nutritious. If there is not a present market for extracted honey, one can be readily created.

THE HONEY EXTRACTOR is coming into general use, and justly so. It is a German invention, is comparatively simple, and not very expensive, and by means of this the honey is thrown from the combs by centrifugal force, when they are returned to the hive to be filled again. If taken from the hive before they are capped over, it saves work and time to the bees. If not removed for extracting before they are capped, the caps are cut off with a sharp knife run over the comb. There are various machines now made. They should be of metal, run with gearing, be light and strong, and so made that only the basket carrying the combs is revolved, leaving the can or reservoir stationary. They should be large enough to leave space below the basket for at least 100 lbs. of honey.

HIVE FOR EXTRACTOR.—If we are to work simply for extracted honey, the hive may be very simple, and either one story, or two. I think better results are secured from a one-story hive, though a two-story one looks better. The late Mr. Quinby, who had no superior as a practical apiarist, once offered $50 for a non-swarming hive. By a faithful use of the Extractor, almost any hive becomes a non-swarmer—a point in favor of extracting.

HOW AND WHEN TO EXTRACT HONEY.—When necessary to uncap some of the cells, uncapping knives, made with a bevelled edge, are the best. In extracting during the honey season, it is never advisable to wait for the bees to cap the honey. If the honey is kept in a dry, warm room, and it should be kept in no other, there will be no danger from souring, even if the honey is extracted when quite thin. We have frequently extracted during the honey season as often as every other day, and with no bad results. We would not dare do this, if the honey must be kept in a cool room, especially a damp one. The best place to keep extracted honey is a room that is warmed up to 70 or 80 degrees Fahrenheit, each day, when the sun shines hot. Put the honey in open barrels or cans; cover with cloth that will keep out the dust, but not prevent evaporation. In extracting, care should be taken not to take away so much as to starve the bees the coming winter. The bees can be fed, but that may be neglected, and so honey enough should be reserved. Honey may be extracted from combs with brood, and not throw out the brood; this requires a very even motion. A sharp, sudden jerk will remove most of the bees from the comb; the remainder may be removed by using a bunch of asparagus, a pine twig, or a quill from the wing of a goose or turkey.

COMB-HONEY.—If the market makes it more desirable to work for comb-honey, sections should be used. Those 4½ inches square and holding one pound, are the most profitable as they find a ready sale. The sections may be placed in a crate above the brood-chamber, or may be suspended in the body of the hive in a wide frame. Sometimes the bees are slow to go into the sections above the hive. In this case it is quite desirable to have the sections so arranged that they may be readily transferred from the body of the hive to the crate above. They are put into the body of the hive until the bees commence to work in them, and then are removed to the crate above where the bees will continue to work. Putting a small piece of uncapped drone-brood into the sections above will sometimes induce the bees to commence work there. As the brood hatches out, the bees will fill the cells with honey, and no harm is done.

TO SECURE A GOOD YIELD of comb-honey, the colonies must be strong, and to have them thus, and not be bothered with swarming, requires skill and care. A much more skilful bee-keeper is needed to obtain the best results with comb-honey, than to procure the best harvest of extracted honey.

Worse and Worse Weeds.—Sometime ago we mentioned the fact that the flowers of the Ox-Eye Daisy were in such demand by the city florists, that several persons were engaged in forcing them, in order to get them into bloom in early spring, at which time they were sold at a price sufficiently high to pay for the labor expended. When the plants came into flower in the fields, they were offered at every street corner, and were not much in demand. Later, we have seen in the florists' windows, clusters of the flowers of a still worse weed, the Toad-flax (*Linaria vulgaris*), also called "Butter and Eggs," and in some localities "Ramsted Weed." This is now justly regarded as one of the worst weeds of our farms, yet the writer can

recollect when it was a favorite garden plant. Clusters of this were generally offered by the Broadway florists. Another weed appeared later in the windows, and noticeable from the fact that it is a native. The two plants mentioned above, are introduced from abroad, as are the great majority of the weeds of our fields and gardens, but in *Rudbeckia hirta*, the "Thorny cone-flower," we have an undeniable native. This is supposed to have been brought from the West in baled hay; at all events it is now thoroughly distributed throughout the meadows and pastures of the Eastern States; it has come to stay, and makes itself more thoroughly at home from year to year. Like the Ox-Eye Daisy, it belongs to the great Sunflower Family. It is much larger and coarser than that; its flowers are much larger, with yellow rays, and the central portion, or disk, of so dark a purple that it is almost black. The stems and foliage are very coarse and beset with rough hairs. To see this miserable weed, the increase of which we have watched with dismay, offered for sale, and to see large clusters of it in the belts of ladies who had purchased it, produced a sensation far from pleasing. It will be curious to watch what effect this sudden bringing into favor of some of our most pernicious weeds will have upon the agriculture of the country.

SUNDRY HUMBUGS

Every spring wonderful varieties are offered of seed wheat, seed corn or oats. Farmers and others are asked to invest in "Self-pruning" grape-vines, in strawberries which grow on bushes, and in peach trees which can not be injured by borers because they are grafted on the "French Willow." Where are all these wonders that have been offered with such a flourish at any time during the last twenty years? Were the claims made for these well founded, our grain product, per acre, should have been doubled, while statistics show that it has really diminished. What has been true in the past, will also prove true with all the extravagant claims now made. We would by no means say that there may not be improvement in grains as well as in other plants, but real improvement does not take such enormous leaps as to double the yields of corn or wheat. When extravagant and improbable claims are made, we are safe in letting such wonderful things alone, no matter how strong the asserted claims, or how many recommendations may be shown from persons with names suspiciously resembling well-known trustworthy individuals. As a rule, such names are fictitious.

We went where he was, and he wasn't there.

In a circular received from the West, one of the strongest and most effective recommendations of an article was signed by the name of a distinguished citizen of high repute in New York City, but with a slight change in the initials, to avoid forgery outright. His place of business was given on Broadway. We went to call upon him and see what it all meant. The number given took us to Trinity Church grave-yard, where the street numbers are omitted. The sexton told us, "there might be some such person buried there, but it must have been a good while ago, and he guessed he'd gone out of business." This is a common dodge of the swindlers, and with some quack medicine dealers, who furnish such long lists of cured persons.

Secret Insect Remedies.

Farmers, as a general thing, have not had an opportunity to learn much about insects, and a number have been victimized by offers of remedies for their destruction. One chap has picked up many dollars in one of the fruit-growing localities by selling some stuff to be laid in the crotch of the tree to keep out borers. Upon examination, the medicine proved to be only a very poor, dark-colored soap, made into rolls and wrapped in a showy label. The recipe man has been around again in some Western States. The recipe for borers costs $5—a good price for being told to mix a pint of Turpentine with a gallon of Soft-Soap, and rub the body of the tree with it. This applied to the tree would no doubt, as long as it lasted, prevent the female borer from laying her eggs. But the recipe says: "It penetrates into the sap of the tree, and destroys all the insects that subsist upon the sap or on the leaves," which is utter nonsense.

Some Impossible Things.

When a maker of imitation jewelry claims that his diamonds are just as good as real ones, as they are quartz crystals covered with a coating of real diamond deposited by electricity, we know that the statement can not be true. His imitation stones may be very good ones, but they are not produced in this manner. One concern makes a great flourish over its imitation diamonds, claiming that they "are produced chemically," and we have no doubt of it. They are a kind of glass; this has to be melted, and as fire of any kind is a very important chemical operation—of course they are "produced chemically;" so is a Johnny-cake. When the Battery man tells us that his "Electro-Medicated Glasses" are produced by heat generated by electricity, and that the glass is "medicated," and that the "chemicals keep the glasses perfectly cold," it is very amusing, and very nonsensical. Some of the materials of which all glass is made, may be used separately as a medicine, and so far as this goes, all glass is "medicated." Glass of every kind is a "chemical" compound, and the use of this high-sounding term is very smart.

"The Great English Sterling Cutlery Co."

We have many inquiries as to this. "Sterling" is a term applied to silver, to indicate that it is of the fineness of British coin. In this country the coin consists of one-tenth of alloy; in England, of one-twelfth, and "sterling" refers to silver of that degree of purity. It can only apply to cutlery so far as that is plated with silver. The term is also used to express excellence, and we may speak of a "sterling man," or a "sterling boot-jack." "Sterling" can only, in a figurative sense, be used to describe articles of steel. As to this English company, if it offers Spoons at $1.00 a set, Cake-Baskets at $1.75 each, and so on, probably these prices are as low as they can afford them. If any one orders such articles, supposing that they will get things that are worth any more than the price asked, he has a poor knowledge of human nature and of the principles upon which the business of this world is carried on. A set of spoons for $1.00 is 16⅔ cents each, and if any one expects to get much over the value of a dime in silver on each spoon, he must be very innocent. We would remind all those inconsiderate persons who think they may get gold or silver articles for less than their real value, that there are in every city those who deal in these metals as a business. If any article is offered for $1.00 that is really worth $1.10, they buy it up and have it in the melting-pot very quickly. In silver ware and jewelry, be sure that, whatever the price, it is never offered at less than its real value.

That "Washing Machine"

has turned up again. Its career closed in New York soon after our explanation, with an engraving of the "machine," a few years ago, but it now appears in full bloom in Boston, where it is no longer the "United States," but the "New Home Washing Machine," probably so called because it has taken a new home. The circulars (as before, printed upon Postal Cards,) are of a similar tenor (though differently worded) to those formerly sent. The recipient is told that, "being informed that you are favorably known throughout your neighborhood, we have the pleasure of making you the very *liberal offer* found below." Then follows much in praise of the machine, "doing away with all the miseries of wash-day." The "special offer" is on your promise "to show the machine to any five of your lady friends, and send 90c." (It was only 75c. in New York, but washing machines have probably "riz"), the machine will be forwarded with "confidential prices." The "machine," when received by mail, will be found to consist of two rollers fixed to a handle, a contrivance to be used in rubbing clothes upon any wash-board, and in no sense a washing machine, as that term is generally understood.

A Home-made Incubator

has been advertised, or rather directions for making one, to be sent for three 3-cent stamps. One of our friends invested his stamps, and sends us the circular he received in return. Directions are given for constructing the affair; how practical they may be can not be told, unless one attempts to follow them, but the nub of the circular is just here. After one has made his incubator, he is informed that he can get "directions for managing it" in a book which contains much other information, by sending $2.00. The same circular also advertises eggs. It seems to be an "advertising" affair all through.

Mutual Marriage Associations.

We must answer all inquirers that we do not know that there is any difference in these as to "responsibility." In some States they have been stopped, as they have not complied with the laws regulating insurance companies, and so far as may be seen from the circulars, they are, in principle, insurance concerns. If in a marrying situation and mood, we should prefer to keep the management in our own hands, and save the stamps for family expenses, in preference to employing agents to handle the funds, on a promise of their growing in others' hands.

Cures by Faith and Imagination.

Probably most of our readers have heard of the experiment tried by some medical men upon a gentleman in robust health, but who had a pretty lively imagination. Stationing themselves a mile apart along a road which he was to pass, each one meeting him inquired after his welfare, and expressed great solicitude concerning his health, professing to see in his countenance indications of approaching serious illness. He rebuffed the first one with the remark, that "he was never better in his life." But as one after another talked in the same way, he became alarmed, grew dizzy, and before reaching home was thrown into a high fever, which lasted two or three weeks. In another case, a soldier condemned to be shot was reprieved at the last moment. But without informing him of the fact, he was led out and placed before a firing platoon, and saw their guns levelled at him. A dozen men simultaneously fired towards him with blank cartridges, and he actually fell dead through fright. We know a highly respected merchant who is intelligent enough to have carried on a large business, amounting to many hundreds of thousands of dollars, with branches in other cities. Yet he has for many years carried a horse-chestnut in his pantaloons' pocket, in the full belief that it keeps off rheumatism. We could give similar illustrations, almost without number, of the power of faith or imagination. It is this that lies at the foundation of the success of so many medical nostrums. People imagine themselves ailing, and sometimes are so. The venders of these nostrums, by the skilful use of language, and of printers' ink, so captivate the imagination and faith of this class of people, that their inert medicines, or stimulating mixtures made up of cheap whiskey disguised by coloring, and some bitter or slightly nauseous drugs, actually restore them to health—in some cases. But for the darker side, the great amount of good health destroyed by dosing with worse than useless drugs, and the habit of intemperance so often formed by the use of these alcoholic mixtures, frequently dubbed "temperance bitters," we should be less inclined to wage unceasing war upon the whole "patent medicine" business.

Electricity and the Imagination.

We conversed the other day with a highly intelligent business man, at the head of one of the largest establishments in the country, who said he was benefited by using an "electrical brush."

We procured one of the same kind and dissected it. It differed from any other good common brush of bristles, in having a fancy back and handle, in which was concealed a bit of steel, rendered magnetic by drawing it on a permanent magnet, or an electro-magnet. There is no possibility of this bit of magnetized steel producing sufficient electrical influence through the bristles to afford the slightest curative effect upon any scalp, or full head of hair—except by imagination. But the shrewd venders of such brushes send along in the box with each brush a small pocket compass. When the metal in the brush handle is brought near the needle of this compass, it attracts or repels it, according to which end of the wire is presented, and the sight of this, with the wonderful cures so strongly set forth by advertisement and circular, actually captivate the imagination and faith of many otherwise intelligent people. They buy and advise their friends to buy these brushes, at much larger prices than equally good brushes sell for when not claimed to be "magnetic." A pocket-knife, or a scissors' blade, or a knitting-needle, especially if magnetized, will have the same effect upon the compass needle as does the loaded brush handle. There is a large variety of batteries, of magnets, of electrical garments, etc., that differ nothing in principle, or in real effect, from the brushes described above. It is a pretty safe rule to reject medical articles, if the words "electrical" or "electricity" be attached to their names. If you wish to pay $3, $5, or $10, for a thing on its own merits, all right, but don't pay extra for having "electricity" added to its name.

The Latest Fraud upon Farmers.

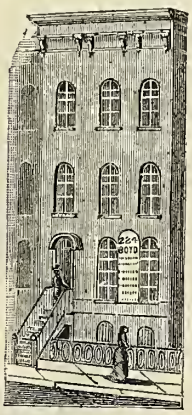
Bessarabia Corn.—The "New York Agriculturist."—The New York and London Oculist.—Boyd's Galvanic Batteries.

It may be wondered why we put the above all together. We can only answer, in the words of the poet: "All are but parts of one stupendous whole." In the navy, the etiquette is for the younger officers to precede the admiral, so we put the youngest first. Or to take an agricultural view of it, the "Battery" is the root, while the latest development, the "consummate flower" (we say "flower" only figuratively) is "Bessarabian Corn." To begin at the root, the "Battery," we have months ago shown that the thing was a mere toy, and could by no possibility produce electricity (galvanic or other) and could have no curative power. After the "Battery" came the "Medicated Glasses," to which that interesting sheet, the "New York and London Oculist," is in part devoted. Our view of these glasses may be gathered from the "Humbug" article in the present number. Next in ascending this remarkable "Family Tree" we have the "New York Agriculturist." Its "Vol. I. No. 1," came in November last; but though we have watched with "waiting eyes," it has not appeared since. Its leading features are: "The French Detective"; "The Elopement, a Tale of Jealousy and Retribution"; "Baldy, a Story of the Wisconsin River," and other such highly "agricultural" essays. Its chief advertisements are of "Boyd's Galvanic Batteries," "Psychomancy, a Book for Curious People," treating of the "Significance of Dreams," and some things that for sake of decency we omit mentioning. It had some advertisements of people who wanted to marry, one of a "Court Toilet Powder," and one of "Boyd's Medicated Conserves." With such a list of "agricultural advertisements," can it be thought strange that we were anxious to see No. 2? But as it now appears to us, this "New York Agriculturist" was a brilliant design, a stroke of genius. We have often insisted that a fruit should have but one name; we are now convinced that a paper should have but one. Half or more of our correspondents address us as "Dear Agriculturist," dropping the "American." In talking with our friends, we observe that they say "The Agriculturist," and among ourselves, "American" is rarely, if ever, used in speaking of the paper. In view of the fact that the journal is more frequently mentioned by its hosts of readers as "the Agriculturist," and the other fact that (for convenience) it is printed in New York, it is easy to see that when "New York Agriculturist" is named or quoted, a large share of the people of the United States would infer that the *American Agriculturist* was intended. We look upon this, especially since we have seen the use made of it, as a very ingenious dodge. So much for our "New York Agriculturist," of which our one number makes a lonesome appearance, and we wish we could get another, so that we might have "a file" of it. We now come to the full fruition of our family tree:

The "Bessarabia Corn,"

the merits of which are set forth in a (yellow) circular by "Wm. F. Fowler & Co., 742 Seventh Avenue, New York City, Dealers in Agricultural Implements, Seeds, etc." The circular is illustrated by a cut of the section of an ear, but with the exception of the fact that the artist has put in a few more rows of kernels than corn usually has, there is nothing remarkable about it. This corn is "Guaranteed to Yield One Hundred Per Cent More to the Acre than the best American Corn with the Same Cultivation." Now that is "talking business." Some inconsiderate person may ask, "Who guarantees this?" The circular says, in full-faced type, "Wm. F. Fowler & Co." "But who are they?" We shall see presently. Of course we at once procured samples of this remarkable corn. There are an unusual number of small and misshapen kernels, but the best of it seems to be nearly as large as the "horse-tooth" corn, to be found on every Southern farm. But who has tried it? We read: "We have tried this corn on our experimental farms, and find it even better than is claimed for it. No farmer in the United States should miss purchasing a package of the Bessarabian Corn.—*New York Agriculturist*, Nov. 15th, 1881." "Ah, ha!" said we; now we know why the "N. Y. Agriculturist" was published—to puff this "Bessarabian Corn," and at once turned to our one only number (Nov. 13th,) of that agricultural sheet, to see the article from which the quotation is made.

We looked all through its pages, and failed to find it. One of the few Agricultural items is "Some Facts About Corn," but that, so to speak, doesn't "Bessarab" once.



"BESSARABIA" HEAD-QUARTERS, W. 50-st.

Wm. F. Fowler & Co., how could you take in vain the name of the "New York Agriculturist" — its very youth should have protected it.—And, Wm. F. F. & Co., are all the other quotations in praise of this corn, from (of all places) English journals, just as reliable as that from the "New York Agriculturist?" But Wm. F. F. and Co., before we discovered your remarkable way of quoting, we went up to make the acquaintance of our cotemporary the "New York Agriculturist," and not wishing to be unknown to any "Dealers in Agricultural Implements, Seeds, etc," we went to see *you*. No. 1528 Broadway, between 44th and 45th streets, was the first objective point—the publication office of the "N. Y. Agriculturist." There was an empty store with the sign "To Let." The windows were decorated with the circulars of Boyd's Glasses, and there was a card saying that Boyd had removed to 203 W. 49th street. Baffled in finding "our respected cotemporary," we would console ourselves with the "Implements," and made for Wm. F. Fowler & Co., No. 742 Seventh Ave. The building No. 742 7th Avenue is on the northwest corner of 49th Street and 7th Avenue; the upper part of this building was occupied by Boyd, but *his* entrance to the house was No. 203 West 49th Street. The card on the door of 1528 Broadway directed persons to 203 West 49th Street, as the place where Boyd had removed to. The only indication of "Seeds" to be found at 742 7th Avenue, were the seeds of delirium tremens, in the shape of a low liquor store. The bar-tender knew nothing about any other "Seeds" than those sitting around the place. On the corner of the house, above the gin-mill, was a sign that Boyd would remove on May 1st to 224 West 50th St., near Broadway. At W. 50th St. we inquired for Messrs. Fowler & Co. Boyd, we knew you at sight, and by the way you looked us over, you evidently "smelt a mice." We will credit you with having kept a straight face when you explained that "Fowler & Co.," had moved, and that you were attending to their business for a few days, but they, (F. & Co.) would at a stated time be at your house. Where Fowler & Co., with all their stock of "Agricultural Implements, Seeds, etc.," had moved to, you omitted to mention. We asked where the "N. Y. Agriculturist" could be found, and when told that "it was not published any more," our feelings were much like those of the little girl, when she found that her doll was stuffed with sawdust. What is there left that is real?—No "N. Y. Agriculturist,"—No "Wm. F. Fowler & Co."—No "Bessarabia," but some corn—nothing now seems real but Boyd, and if he moves so from place to place, we may soon lose sight of him; but, no, we shall not. We have perhaps given more space than the matter deserves, but if journals will continue to advertise such stuff as "Bessarabian Corn," without even inquiring into the matter, we feel obliged to show them occasionally the truth of our frequently repeated assertion, that no seed, or plant, or fruit of any value, is ever introduced by transient and unknown parties. When another of these turns up, recollect "Bessarabia," the meanest of humbugs, because it lies to farmers in a most outrageous manner, and even lies about its own miserable sheet, which was apparently started—one number—to mislead the people with the idea that they were getting the "AMERICAN" *Agriculturist* for 75 cents a year; and that it was this Journal that commended the Bessarabian Corn, and the other humbugs, "electrical," and otherwise.

We specially request all those who have sent 75 cents for a year's subscription to the "New York" Agriculturist, or who know of others having done so, to give us the particulars, and let us know if they have ever received back their money, or anything else for it, save the single "Vol. 1, No. 1." The names will not be published without the writers' permission.

Where is Bessarabia?

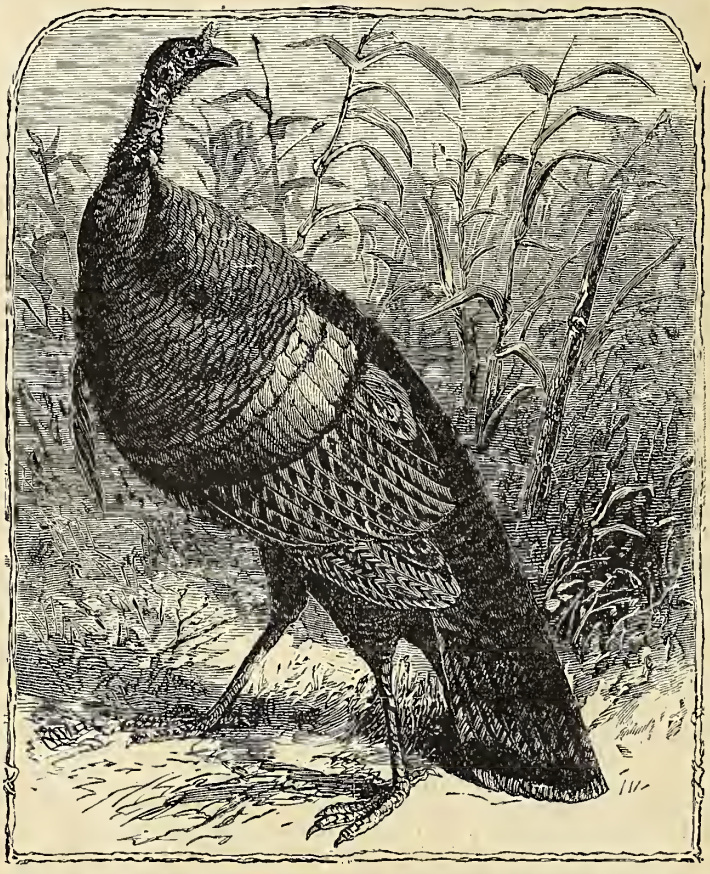
may be asked by those a little rusty in their geography. We must ask *which* Bessarabia? One is a province in southern Russia, and the other is pleasantly situated on the banks of the Delaware and Schuylkill, and its chief city is Philadelphia. Since the foregoing account of this remarkable corn was in type, our researches have extended to Bessarabian Philadelphia. We there learned from a seed house that a few months ago they sold ten bushels of "Southern Flint Corn" to J. C. Boyd, of New York, and furnished them a copy of their engraving. Later the seed house had an order for 20 bushels more of the corn, but having seen the Bessarabia circulars, they, in view of the use made of it, declined to fill it, a fact so creditable, that we regret that we are requested to avoid giving the name.

This completes the chain of evidence in this latest fraud upon Farmers; while "morally sure" that the corn was of some common kind, we lacked the evidence which has now so unexpectedly turned up. While we can doubtless prove, even by Boyd himself, that the corn he bought in Front St., Philadelphia, is the same that Boyd, or Fowler, sends out as the "Imperial Russian," and "Bessarabian,"—yet who doubts it? Most swindles like this are shrewdly managed up to a certain point, where they weaken, and, in the slang of the day, "give themselves away." What folly for Boyd to locate his "Bessarabia" so near New York! and to buy it as Boyd, or as Fowler & Co!—there is no need of it, not the slightest.

The Wooing of the Wild Turkey.

BY J. M. MURPHY.

The males commence wooing as early as February in some of the extreme Southern States; but March is the opening of the love season throughout the country, and April the month in which it reaches its highest development. The males may then be heard calling to the females from every direction, until the woods ring with their loud and liquid cries, which are commenced long ere the sun appears above the horizon, and continued for hours with the steadiest persistency. As both sexes roost apart at this period, the hens avoid answering the gobblers for some time, but they finally become less obdurate, and coyly return the call. When the males hear this, all within hearing respond promptly and vehemently, uttering notes similar to those which the domestic gobblers do when they hear an unusual sound. If the female answering the call is on the ground, the males fly to her and parade before her with all the pompous strutting that characterizes the family. They spread and erect their tails, depress their wings with a quivering motion and trail them along the ground, and draw the head back on the shoulders, as if to increase their dignity and importance; then wheel, and march, and swell, and gobble, as if they were trying to outdo each other in airs and graces. The female, however, pays little attention to these ceremonious parades, and demurely looks on while the rivals for her affection try to outdo one another in playing the gallant and dandy. When the strutting and gobbling fail to win her, the candidates for matrimony challenge each other to mortal combat, and whichever is successful in the contest walks away with her in the most nonchalant manner. The easy indifference of the hen as to which she will follow may not be pleasing to persons imbued with romantic feelings, yet she is only obeying a wise law of nature, which decrees that only the fittest should live, and in the lower animal world these are necessarily chosen for their physical qualities.



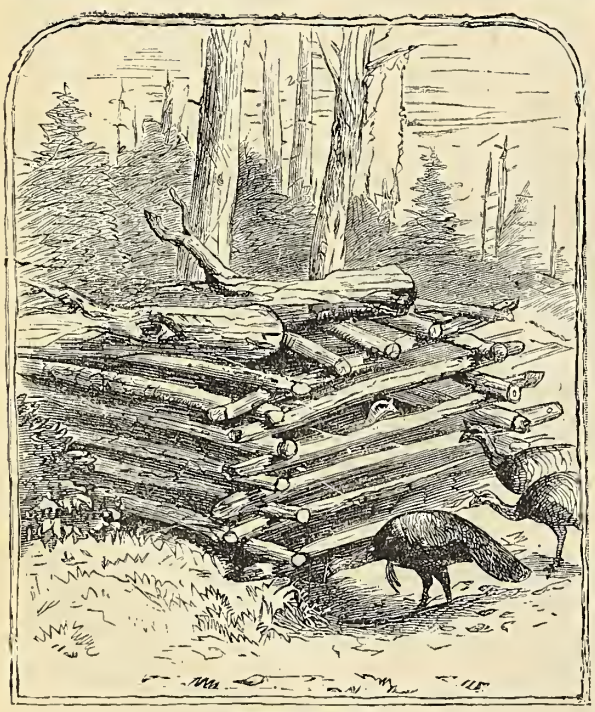
The battles between the males are often waged with such desperate valor that more than one combatant is sent to join the great majority, as they deliver very heavy blows at each other's heads, and do not give up a contest until they are dead, or so thoroughly exhausted as to be scarcely able to move.

When one has killed another, it is said to caress the dead bird in an apparently affectionate manner, as if it were very sorry to have been compelled to do such a deed, but could not help it, owing to the force of circumstances; yet I have seen the winner in a tournament in such a rage that it not only killed its rival, but pecked out its eyes after it was dead. When the victors have won their brides, they keep together until the latter commence laying, and then separate, for the males are so jealous that they would destroy the eggs if they could, in order to prolong the love period, and the hens, knowing this, carefully screen them. The males are often followed by more than one hen, but they are not so polygamous as their domestic congeners, as I never heard of a gobbler having more than two or three females under his protection. The adult gobblers drive the young males away during the erotic season, and will not even permit them to gobble if they can, so that the latter are obliged to keep by themselves, generally in parties of from six to ten, unless some of the veterans are killed, and then they occupy the vacated places of the bridegrooms, according to the order of their prowess.

Some aged males may also be found wandering through the woods in parties of two, three, four, or five, but they seldom mingle with the flocks, owing, apparently, to the waning of their salacious disposition. They are exceedingly shy and vigilant, and so wild that they fly immediately from an imaginary danger created by their own suspicious nature. They strut and gobble occasionally, but not near so much as their younger kindred. Barren hens, which also keep by themselves, are almost as demonstrative in displaying their vocal powers, airs, and feathers as the old males, whereas they are exceedingly coy and unpretentious when fertile. This fact would seem to prove that ordinary animal nature is changed by circumstances. When the love season is over, the males are very much emaciated, so, when the hens leave them, they keep by themselves until they recover their strength, and then reunite in small bachelor parties; but, instead of being exceedingly clamorous, as they were in the early part of the mating period, they become almost silent. Yet they sometimes strut and gobble on their roosts, though, as a general rule, they do not, and content themselves with elevating and lowering the tail feathers, and uttering a puffing sound. They keep at this exercise for hours at a time on moonlight nights without rising from their perch, and sometimes continue it until daylight.

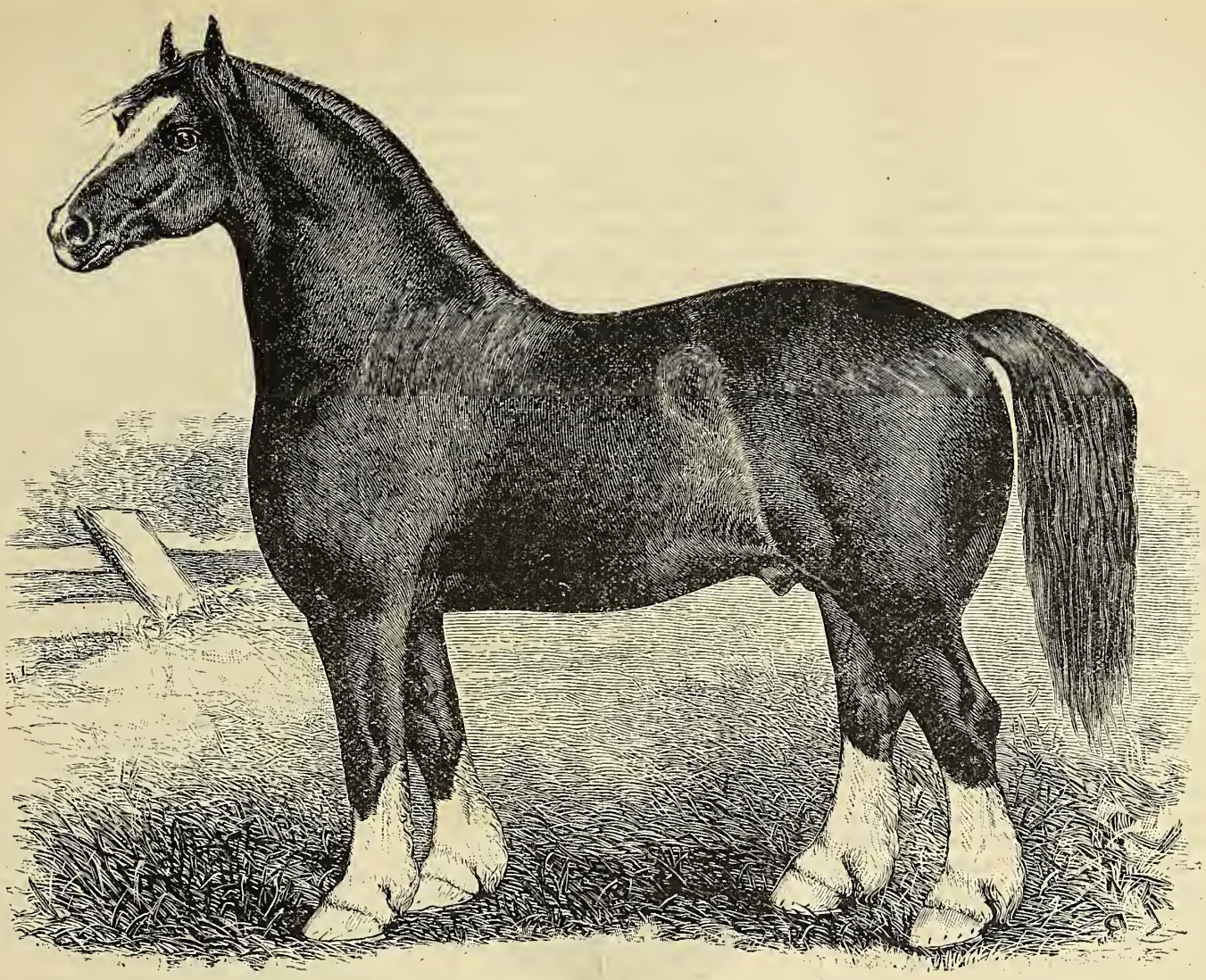
When the hen is ready to lay, she scratches out a slight hollow in a thicket, a cane brake, beside a prostrate tree, in tall grass or weeds, or a grain field, and lines it rudely with grass or leaves, and then deposits her eggs in it. These, which vary in number from ten to twenty, are smaller and more elongated than those of the domestic turkey, and are of a dull cream or a dirty-white color, sprinkled with brownish-red spots. Audubon says that several hens may lay their eggs in one nest, and hatch them and raise the broods together. He found three hens sitting on forty-two eggs in a single nest, and one was always present to protect them.

If the eggs are not destroyed, only one brood is raised in a year; but if they are, the female calls loudly for a male, and when she is rejoined by one, both keep company until she is ready to commence laying again, when she deserts him or drives him away, as he has the very strongest penchant for destroying the eggs, in order to keep her in his company. This forces her to build her nest in the most secluded spot she can find, and to cover it carefully with leaves or grass whenever she leaves it. We present pictures showing how wild turkeys are "called" by hunters to them with whistles, and how they are entrapped. When once enticed within this trap, they are so confused as to be unable to find their way out.



TURKEY-TRAP.

"CALLING" TURKEYS.



THE CLYDESDALE STALLION "NUBIAN."

Clydesdale Horses.

The antiquity of but few breeds of our domestic animals can be the subject of special boasting on the part of their breeders. Among horses the only really ancient breed is the Arabian, and while a number of more or less natural breeds exist, of which it is difficult to say that they owe more to *man* than to *nature*, nearly all the highly valued breeds of horses of the present day are the result of patient and careful breeding with a definite object in view. The Arabian has been thus carefully bred from remote antiquity. Pedigrees have been kept, performances passed into legend and history, and the blood of certain families treasured beyond price.—Noticeably these families are traced uniformly in the *dam's line*, not in the sire's line, as we too often do in stating the pedigrees of our carefully bred horses.

The English thorough-bred race-horse originated in the first half of the 18th century, say 1715 to 1760, by crossing and mingling Arabian, Turkish and Barb blood, with more or less native English, and keeping pedigrees with the greatest care. Our own American thorough-breds are only a branch of this breed, kept perfectly free from other blood. So it is also with the so-called "English" horses of Europe. In every country where they are valued, pedigrees are recorded and the blood is kept pure or the horses lose cast at once. The Orloff trotters of Russia originated late in the 18th century, and represent the selected progeny of a single sire; pedigrees being kept, and performances recorded.

Thorough breeding really consists in keeping and studying pedigrees and performances, and pairing animals with reference to qualities conspicuous in their ancestry which the breeder desires to perpetuate; and we may expect with confidence to be able thus to improve the family and through it the breed in whatever direction we choose to expend thought, money, and energy. In this way we are producing a breed of trotting horses in this country, which within fifty years will probably be as well entitled to the term thorough-bred as any other horses.

Among draft-horses this principle has just as legitimate application as among horses used for running and trotting. The French originated a most excellent and useful breed of draft horses—the Percheron—which was only saved from extinction by the opportune writings of M. Charles du Hays (not du Huys), and others. These horses were and are bred without pedigrees, and have none, except such as depend upon the memory of the breeders. It is to be hoped that they will hereafter be bred pure, and that pedigrees will not only be kept but recorded in connection with such tests and performances as will prove the superiority of individuals and form a basis for breeding. American draft-horse breeders have selected as it were by common consent two breeds—the Percheron (including the inevitable mixture of the less good Norman blood), and the Clydesdale Horse. They are both excellent, and each may well have their ardent admirers and advocates.

The Clydesdales have, however, one immense advantage. They have been bred from the first—that is from early in the present century, say from 1810–20—with carefully preserved pedigrees, which are the subject of record. They show the result, in persistency of type, in steady improvement, and in the increasing demand for the horses both for labor and for breeding. They possess another advantage, namely, color. Although there is a family of Gray Clydes which find favor, yet, in the long run, dark colors have a decided advantage over grays in the market. The Clydes are large, yet in size the old English cart horse is superior, but he has the reputation of being a soft, fleshy-limbed beast. They have good feet, yet one may hardly say "none have better"; though it would be hard to name a breed that has, without fear of contradiction. They are hardy and tough when mature; last well at slow, heavy work, and among them, those which do not naturally reach great size and weight, trot off freely, and with ease move heavy loads at a brisk pace. They have neat heads, well set on arching necks; their breasts are deep and broad; backs short, connecting the magnificent sloping shoulders with the massive loins; barrel cylindrical, and well ribbed back. Though standing 16 to 17 hands high, and weighing 1,500 to 2,000 pounds, they have the look of low-set, pony-built horses, which is due to the shortness of their

limbs, and to the weight of bone in them. The legs are flat, with hard firm tendons, and are remarkably free from bony growths, splints, spavins, etc. A fancy which we can hardly approve, has led to the encouragement of an enormous growth of hair upon the legs and fetlocks, and this is now regarded as indicative of purity of blood. Heavy manes and forelocks are also prized.

The traveller meets with magnificent teams of these horses, or half-breds in all the large cities of England and Scotland, and the American is amazed at the loads which they move with obvious ease. On level, well paved streets, or on macadamized roads, a single horse will draw and is often loaded with 3 to 5 tons. Two tons to the single horse, and four to six for pairs is usual. We do not load our heaviest teams like that in this country—but it is surely economical in every way. The demand for heavy horses is constantly increasing in our large cities, and for this class of horses there is always a quick sale. They are easy keepers, and cost no more to raise until they are five than lighter horses, which require more care and training, while the Clyde colt at three will earn his own living, though unfit for market.

As their name implies, these horses originated in the valley of the River Clyde, whose banks for miles are lined with the greatest ship yards of the world, and in those yards large numbers of these magnificent horses are advantageously employed, and where they take great pride in them, as one of the characteristic products of this famous, fertile and romantic valley. The Animal Shows of the Glasgow Agricultural Society are especially interesting on account of the exhibition of great numbers of these horses, where competition for the prizes is very close and severe.

"NUBIAN," the stallion whose picture we present, was bred in Stirlingshire, Scotland, foaled in 1876, and imported in 1880. His sire was "Ivanhoe," a famous prize-winner, and his dams of immediate ancestry, have won prizes and gold medals enough to make a small fortune. Powell Bros., who are the owners of "Nubian," are large importers and breeders of Clydes. Their stock-farm in Crawford Co., Pa., is famous for its excellent buildings and appointments. They breed Percherons also, and trotting horses, but the Clydesdales are their especial pride, and were chosen after studying the best breeds in their native lands.

The Varieties of Barley.

A friend asks if the commonly cultivated kinds of barley—the two-rowed and the six-rowed, are of the same species. It is a curious fact that but little is positively known about the origin of our cereal grains. They have been cultivated from the earliest recorded times, in a state not essentially different from their present one. None are at present known with any certainty in their wild state, though in the case of barley, specimens which are not essentially different from the two-rowed kind, have been found apparently native near the Caspian sea. In order to understand how two varieties so unlike in appearance, can be forms of the same species, it is necessary to examine a head. What we call a head of barley consists of the flowers of the grain with the accompanying chaff, all crowded together upon the upper end of the stem or straw. If we strip off grain and chaff, and leave the stem naked, it will be seen that this portion is not smooth and straight, like the rest of the straw, but has a wavy or zig-zag appearance, due to notches formed by a hollowing out of the stem on two sides, and that these notches are placed alternately. The flowers of the barley are attached to the stem at these notches, there being three at each one. A single joint is shown in the engraving, with the three flowers, *a*, *b*, *c*. We call these *flowers*, but their proper name is *spikelets;* in barley these spikelets are one-flowered and mature but one grain, while in the related wheat, the spikelet has several flowers, and produces three or four grains. The parts, *a*, *b*, *c*, are chaffy scales, which envelope the parts of the flower and afterwards the grain, each one bearing a long, rough, bristle-like point; the bristles at the sides and elsewhere, *d*, *e*, are merely appendages to the flower, and we need give them no further attention. It will be

A JOINT OF A BARLEY HEAD.

understood that the whole head of barley is made up of repetitions of what is here shown; upon the opposite side will be another set of three, and so on alternately to the end. In two-rowed barley, only the central one, *a*, of the three spikelets produces a grain, the others being abortive, and remaining as chaff. But the side flowers are sometimes perfect, and all three form grains, this (there being three similar ones on the opposite side of the head) produces six-rowed barley. It may be that the middle flower, *a*, is abortive, while those at each side, *b* and *c*, both produce grains, in which case we have four-rowed barley, a well-known, though not very common varicty. It will be seen then, how, by the production, of one, two, or three grains at each joint of the head, these very unlike kinds of barley may be produced. It is not an unusual thing in the flowers of grain, as well as in many other flowers, for some of them to be abortive and fail to perfect fruit; such flowers, however, often contain their reproductive parts (stamens and pistils) in a rudimentary or imperfect state; these may be developed by some condition of the soil, or other cause, and the progeny of such plants may continue to reproduce the peculiarity. Besides these differences, caused by the production of grain of one, two, or three flowers at each joint, the character of the chaff, the length of the bristles, or beard, the size and color of the grain, and many other minor differences, produce sub-varieties in each of these three chief kinds of cultivated barley.

Lameness in Horses.

BY D. D. SLADE, M. D., PROFESSOR OF AGRICULTURAL ZOÖLOGY, HARVARD UNIVERSITY.

To the owner of any domestic animal, especially of horses, nothing is more annoying than lameness. To lose his services just when most needed severely taxes one's patience, and all the more because of the frequent difficulty of detecting the cause. Lameness is not in itself a disease, but simply an indication of disease—an exhibition of pain or disability in a limb or limbs, the result of accident, disease, or malformation. We must first ascertain the location, and it is often not only difficult to establish with certainty the exact seat of lameness, but even to determine which limb is affected. For example, a horse in trotting away from us, may seem from the movements of the body, to be lame in one of its hinder extremities, when the difficulty actually exists in one of the forward limbs—a mistake to be rectified when viewing the animal trotting *towards* the observer.

To form a correct diagnosis, many circumstances are to be considered. Thus the animal must be examined at rest as well as in motion. One of the most frequent manifestations of lameness in the stable is "pointing," whereby on lifting the weight from the affected limb, the foot may be extended considerably in advance of the other, or may have a semi-flexed position, the toe just touching the ground nearly or quite on a level with its fellow. The former condition signifies trouble in the foot or posterior portion of the lower limb; the latter indicates injury to shoulder or elbow. The constant shifting of the weight of the body from one fore limb to the other, or the extension of both fore feet, the weight being taken on the heels, with an advance of both hind extremities nearer the center of gravity, indicates severe affections of the front feet.

The bringing forward of one hind foot, the limb being flexed and the toe barely touching the ground, denotes some lesion in the neck or in the region immediately below it. This position is often taken either from fatigue or habit, but is not confined to one extremity. When both hind limbs are in pain, the fore limbs are carried back as far as possible, to remove the weight from the former.

Many forms of lameness can only be detected during motion, and for this a slow trot is best. The animal showing lameness during walking is very lame; severe lameness in one fore extremity is shown by nodding the head in the trot, caused by taking the weight quickly from the infirm limb; the head is thrown upon the sound side. Lameness in the hind extremity is similarly shown but not so marked unless the lameness is very great. If both fore limbs are affected, the horse catches them up and puts them down quickly, making a short uncertain gait. This abnormal condition being sometimes difficult to detect dishonest dealers take advantage of it when an animal is lame in one fore limb, by laming the other also.

If both hind limbs are disabled, the horse is particularly crippled in movements, especially when backed. In this case it is often difficult

to distinguish from mere stiffness, especially as both may exist together.

Certain positive signs aid in determining the exact seat of lameness, as increased heat, swelling, and tenderness. An examination should be made not only in the stable, but during rest immediately after severe exercise, this test being essential to bring out existing lameness in the animal.

The causes of lameness are general and special. The former mainly act indirectly, and are often constitutional; the latter, which are by far the most frequent, are seated in the disabled limb, and are due to wounds, bruises, fractures, dislocations, strains, and to the various results of inflammation in the hard and soft tissues of the limb.

Shoulder lameness is frequently due to a strain, or to direct violence, and is shown in repose by the hanging of the limb; from disinclination to move the muscles, and during motion by the dragging and difficulty of bringing forward the limb, which is doue by a rotatory movement. It is also shown by the flinching when the foot is lifted and carried forward and backward. The positive signs before mentioned may or may not be present. If the elbow is affected, there will be a similar "hanging" of the limb, and excessive nodding of the head in motion. Usually the positive signs of injury are apparent. Injuries to the knee joint, whether from external violence or internal causes, are to be diagnosed by the direct symptoms presented.

In Splint, lameness is usually much increased by exercise. Pressure on the limb shows tenderness, and there is increased heat, with more or less swelling. A small Splint, in developing, may give much more pain, shown by lameness, than one fully formed. Ring-bone, and ossified side cartilages, in their early stages, may be recognized as causes of a peculiar stiffened gait, with the weight thrown upon the heels. The lameness nearly or entirely disappears before the bony deposit appears about the middle and lower pastern. Strains of posterior and other ligaments and tendons of the lower limb evidence themselves by the local symptoms, and alteration in gait. But there are cases of temporary lameness, from very obscure causes, attributable only to a sudden strain of some ligament whose exact situation can only be surmised.

The short, quiet step of the horse, with that inflammation of the feet known as Chronic Laminites in which the weight is thrown upon the heels of the fore limbs, is easily recognized. In the less frequent affection, Navicular Disease, the weight is thrown upon the toes, the gait is short, and the lameness, slight at first, is increased by exercise. Corns are discovered by rapping and pinching the sole, at the space between the bars and the quarters in the fore-feet. Disease of the frog is self-evident by the peculiar odor. A sand-crack sufficient to produce lameness cannot escape observation. Accidental injuries to the feet will generally be known by the history of the case. Lameness in and about the hip-joint, is most frequently the result of strain, and is to be recognized by the peculiar want of movement of the hind quarter, and, if of long standing, by the wasting of the muscles of the region. Stifle-joint lameness, either the result of luxation or of disease, may be known by the dragging of the toe, and by the local symptoms. Bone Spavin is manifested by positive signs, but more especially by the stiffness in the bending of the hock joint, and by the dragging and sudden catching up of the limb, and above all by the disappearance of all lameness during exercise, to re-appear after rest. Bog Spavin, a disease of the true hock joint, gives rise to a lameness similar to the last. The various tendons and ligaments of the posterior limbs especially in the neighborhood of the joints, are very liable to strain, and consequent distention of their sheaths, giving rise to lameness which, however, may offer no special characters.

A Chicken Coop.

Mr. B. M. Ramsden, New Haven Co., Conn., sends us a sketch of a chicken coop that he

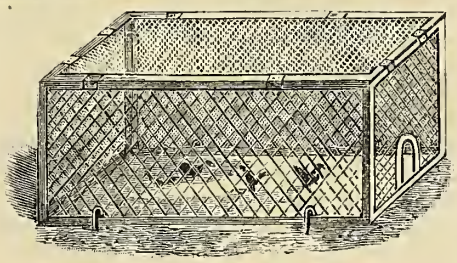


Fig. 1.—A BOX CHICKEN COOP.

has used for years. When not wanted for a coop, it can be used for protecting flowers,

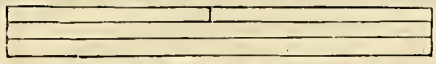


Fig. 2.—COOP FOLDED FOR STORING.

etc., by covering with paper or cloth. Make a frame three feet wide, six feet long, sides three feet. Put on hinges so that the sides will fold underneath, and the ends on top. This coop is light, easily made, and for keeping young chickens in, is very useful. The sides are longer than the top, so as to allow for the ends to fit in, which makes it firmer. Figure 1 shows it when used as a coop, and figure 2 when folded for storing.

Cottage Cheese Profitable.

X. A. WILLARD.

A kind of cheese recently coming into demand in all our chief towns and cities, would soon have an immense consumption, if there was an adequate supply. In some localities it is called "Pot," or "Cottage Cheese," in others, "Dutch Cheese," or "Sour Curds." It is simply the curd of sour milk drained from the whey, molded into small fancy shapes, and eaten while fresh, or soon after.

The manufacture is quite simple. The milk is allowed to become loppered, when it is gently heated to facilitate separation of the whey. The curds are then gathered and salted or otherwise, to suit the taste, and pressed into small molds, or formed with the hand into balls or pats of suitable shape, when it is ready for the table. In cool weather when the sour milk does not readily thicken, it may be put into a suitable vessel set in hot water over the range, and stirred a few minutes until the whey begins to separate. It is then removed and treated as before described. It is usually made from skimmed milk, and fresh butter or sweet cream is often added to the curds while manipulating and pressing into form. This improves the quality and flavor for many.

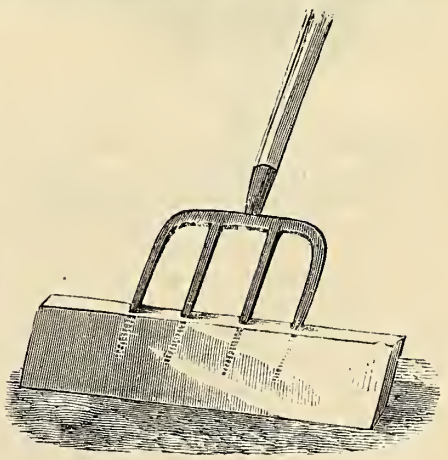
In summer some use large cans having a spiggot near the bottom. The sour milk is allowed to stand in these in the sun, or in warm water, to thicken. The heat separates the whey, which is drawn off through the spiggot. The curds are then removed to a sink having a slatted bottom, covered with a strainer cloth. The curds thrown upon this cloth are soon drained, and ready to be pressed with the hands or molded into forms.

Sometimes this cheese is potted and left to turn into a pasty mass, having a strong disagreeable odor, when it is esteemed most acceptable to those who have acquired a taste for eating it thus, as it has some characteristics of "Limburger."

Cottage Cheese, when fresh aud well made, finds a ready market in cities, and certain butter makers realize quite a profit by turning their skimmed milk into this product. I know leading butter makers in the Northwest who thus dispose of all their skimmed milk, sending the curds regularly to the receiver, who finds a quick sale at good prices. A very extensive milk dealer near Washington, D. C., informed me that so great was the demand in that city, that it was impossible to supply half his customers. Even in small towns there has of late sprung up a demand for the article, and I have no doubt that with proper effort large quantities of milk could thus be turned to good profit. These sour milk curds are not only healthful, but nutritious, and the great liking for them among all classes of people, indicates that they supply some elements in the animal economy, and which nature with unerring instinct craves as an easy way of repairing the waste of the body.

A "Fork" Stable Scraper.

Mr. A. C. Gabel, Kendall Co., Ill., writes us:—"I inclose you a rough sketch of a very handy stable scraper. It is made of an inch board, 5 inches wide, and about 8 inches longer than the width of a four-tined fork. Bore a hole for each tine 1/4-inch in diameter from the edge of the board to about two inches from the opposite edge, the holes passing out upon the side. The lower part of the board is bevelled behind, thus forming a good scraping edge. After the coarse manure is pitched up, the fork is inserted in the holes



A "FORK" BARN SCRAPER.

of the board, and a scraper is at once ready for use. To store it, nail a cleat on the floor 2 inches from the wall, and secure the scraper behind this cleat; place one foot upon the board and withdraw the fork. Notches may be cut in the edge of the board opposite each hole, to assist in inserting the tines."

Pig-House Furniture.

BY COL. F. D. CURTIS.

Several years ago wooden pig troughs were discarded in our pig house, because they were so often out of order and rotted so quickly. The old hogs tore them to pieces or gnawed holes that leaked and wasted the feed. Different kinds were tried from time to time, and while those made of oak or other hard-wood lasted longer than softer woods, the best soon needed replacing with new ones. This was annoying and expensive. Then a highly recommended iron trough was procured from Canada (figure 1). But on account of its round form it was found impracticable for stationary use in the pen, as the hogs would root it out of place, making it necessary to go into the pen among the inmates to

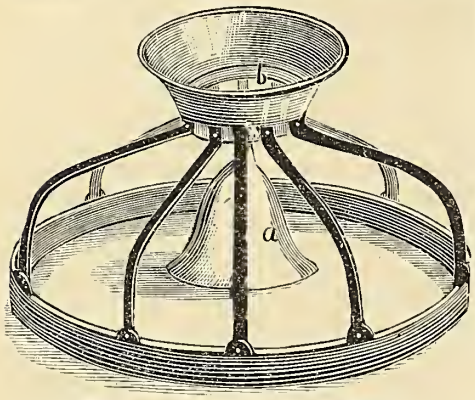


Fig. 1.—A CANADIAN PIG TROUGH.

pour swill into the trough, when quite likely the hogs would upset the pail, or crowd most disagreeably about the person carrying it. It answers well for feeding young pigs, which can be easily kept away; and it is convenient and durable as a portable trough in a yard or field. This trough is cast iron, the sides sloping inward, the diameter of the bottom being less than that of the top. It is 6 inches deep, 28 inches across the top, and shaped like a butter bowl, with an acorn-shaped projection (*a*) in the center, upon which the swill

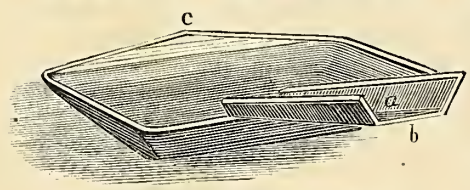


Fig. 2.—IRON TROUGH WITH SPOUT.

is poured to distribute it evenly in the trough. It is guided by the funnel-shaped collar (*b*). This is cast-iron, 12 inches across, and $3^1/_2$ inches wide at the bottom. It is supported by $^3/_8$-inch iron rods, riveted to a wrought iron band, $3^1/_2$ inches wide and $^1/_4$-inch thick. The other ends of the rods are riveted to the upper edge of the trough. The eight divisions thus made by these eight rods prevent the animals from crowding each other.

I devised a stationary pig trough which gives complete satisfaction. There is no patent upon it, and none upon the Canadian one that I am aware of. The "Kirby Homestead Trough" (figure 2), is 4 feet long on the top, and 3 feet at the bottom. The sloping of the sides and ends is so graduated that there are no right angles, or corners, either at the ends or in the bottom. This prevents any lateral pressure and liability to crack by freezing. The corners are made full or rounding. The spout (*a*), cast with the trough, is 17 inches long and 14 inches wide at the mouth (*b*), narrowing to 7 inches at the trough, with sides 2 inches high. Opposite the spout is a rise (*c*), 2 inches high at the center and sloping to nothing at its ends. This prevents the swill from flowing over the side. The trough is 14 inches wide across the top, and $6^1/_2$

Fig. 3.—ANOTHER IRON TROUGH.

inches high from the floor. It rests on its bottom, with two feet cast on its rear lower corners, bending outward at right angles, and with holes in them to admit spiking to the floor. These feet hold the rear side firm, and the front side is held in place by the partition which fits closely around the spout. These troughs can be swept out clean with a broom, and washed out in the same way. This sloping form makes it easy to remove the filth, and to rinse them. They weigh about 100 lbs., the iron being $^1/_4$-inch thick. Four hogs can eat out of one trough at a time. After a dozen years constant use, these convenient troughs are little worn, and not one has ever been cracked or broken.

Another iron trough (figure 3), has been found very useful for feeding young pigs when first weaned, or to drink out of when necessary to supplement the dam's milk with nourishment. It is a small iron pan or trough, 2 feet long, 1 foot wide, and $1^1/_2$ inch deep. It is easily washed out and kept clean and free from taint, a very essential matter when feeding young pigs. Wooden troughs are difficult to keep properly cleaned. A common dripping-pan would answer, but its thin sheet iron soon rusts and leaks. The above iron trough (figure 3) has been used on the farm over 20 years.

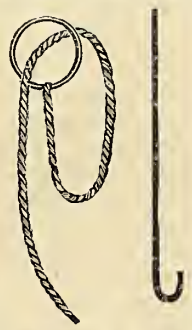


Fig. 4. Fig. 5.

In ringing hogs it is convenient to make the slipping noose in the rope by passing it through a small ring fastened in the end (fig. 4). Without the ring the noose is liable to be drawn tight, making it sometimes difficult to get it loose and off from the snout. With the ring the hog will throw it off as soon as the rope is loosened. A crooked stick (figure 5), is very handy for passing the noose over the nose. The noose can be kept from slipping down by tying it with a short piece of

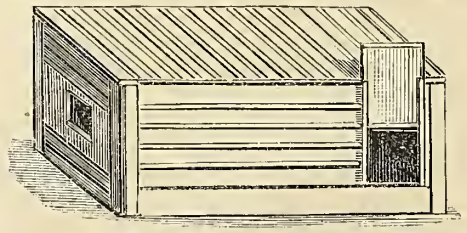


Fig. 6.—A SWINE CRATE.

tender twine, which will break as soon as the hog is caught and a jerk is made on the rope.

A pig house is not complete without a crate or box for moving hogs from one pen to another, or for conveying them from one place to another. Unlike sheep and other small animals, hogs cannot be readily tied or haltered, and it is always risky to attempt it. When put into a crate they can be carried quite handily, or moved about on rollers. A crate (figure 6) can be made with four upright posts 2 by 4 inches, with sides and ends nailed on the bottom, 10 inches wide and 1 inch thick, to which a floor of inch boards can be nailed. The sides are strips 4 inches wide and 1 inch thick. The top and end pieces should be 10 inches wide to give strength and to hold the covering. Doors, made to slide upwards, should be put in each end to allow the animal to pass in at one end and out at the other. An extra door should be made to insert in one end, with an opening in it though which the head of the hog can protrude. Spaces should be made in the covering to hold the top of the door, and cleats nailed on the sides and floor of the crate to keep the door in place, so that the size of the crate may be regulated to keep the head of the hog forced out of the opening, in which position it can be rung, or a noose can be readily slipped on its snout, and fastened to the top of the crate. When this operation is performed, the animal can be allowed to pass out, and another let in to take its place. This will do away with the labor of catching them in a noose, and make the labor of ringing less annoying and safer. By placing the crate in front of the door leading into the pen, there is no difficulty in getting the animals into it. Such a crate is very convenient for the temporary confinement of swine.

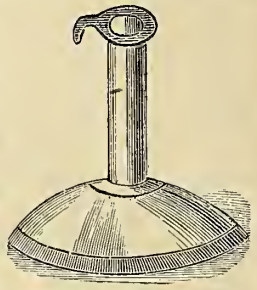


Fig. 7.—CANDLESTICK SCRAPER.

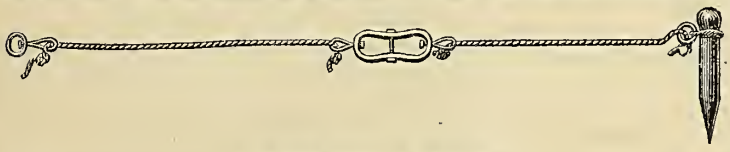
Old-fashioned iron candlesticks (figure 7) are the best instruments I know of to scrape the hair from scalded hogs. They will last for generations for this use and so handy are they that they have become heir-looms in families, and are preserved with great care for use in butchering time.

Scarecrows.—The crow loves planted corn and knows how and where to find it. But this bird lives largely upon insects, most of which are injurious. It is better, therefore, to keep crows from pulling the corn for two or three weeks, and allow them to destroy insects all the rest of the year. They are very keen sighted and sagacious, but there are several effective scarecrows. A straw man soon fails to be of service, because without motion or noise. A bottle with the bottom knocked out, may be swung from an elastic pole; attach a nail to a cord, so it will swing within the bottle, and motion and a peculiar noise are produced, making quite a good and cheap scarecrow. If a piece of bright tin is also suspended below the bottle, it will add to the effectiveness of the device. Any slight breeze will keep the tin casting bright reflections rapidly in all directions. An artificial bird may be made, and suspended from a pole in the same manner. A piece of cork will serve for the "body," into which a number of large tail feathers may be fastened to imitate a bird. The winds will "fly" this "bird," and frighten the visiting crows. Last May (page 198) we figured a "windmill scarecrow," which is a good device for a field of

corn. It consists of a combination of bells, pieces of bright tin, etc., kept ringing and in motion by the windmill attachment. It is much more effective than paper, twine, etc.

Tethering or Picketing Animals.

It is not the most economical use of a pasture to allow animals to roam over it at will, picking up the best bits and trampling down as much as they eat. In some European countries, where the grass is much more luxuriant than with us, it is found profitable to confine the animals to a given spot, by hurdles or tethering, and when this is cleared, to move them to a fresh place. In our hot summers the frequent trampling injures the grass much more than one would suppose. After a breadth has been eaten off, keeping hoofs from it will greatly aid in the recovery of the grass. In tethering animals care should be taken to so place them that they can not interfere with one another, and to provide such a tether that they can not become entangled with it. On the Island of Jersey, where every cow is tethered from her youth, accidents are not known. There a rope is used with a chain at each end, which



A TETHER USED IN FRANCE.

is attached by a swivel. In France the tether for horses is of rope, arranged as shown in the engraving. The picket pin of hard-wood has an iron band carrying a ring, and loose enough to revolve. Midway of the rope is an oblong ring of iron, at each end of which is a swivel, and there is another swivel at the end which is attached to the halter. An iron pin is preferable to the wooden one.

Milk the Year Round.

With good tub butter at forty to fifty cents in the country markets, it is a question in the dairy districts whether six or seven months milking is, on the whole, the best method. The general practice is to have all the cows drop their calves in early spring, get what milk out of them one can on grass, and dry them off as the pasturage fails. They go dry four or five months, and there is frequently no milk in the dairyman's family for months in the winter. The demand for fresh butter in the cities and villages is so great that more of our best farmers are turning their attention to the problem of making winter butter economically. The competition is so lively that they can make their own prices for a gilt-edged article. Of course it takes a little more capital to do this, but if it can be made to pay a fair interest, it will be well invested. The barns will have to be made tighter, so that a third of the fodder will not be wasted in keeping up animal heat. Winter milk and butter cannot be made economically with feeding in an open stack yard, or in an old rickety barn. There is needed a cellar for storing roots, and manufacturing manure. Spring or cistern water must be supplied under cover, and no needless exposure of the cows to the chilling blasts of winter. A variety of food, and that of the best quality for producing milk, must be supplied in liberal measure. Hay should be made of June cut grass, rather than of grass gone to seed in August and September. Hay alone will not give the best results. It should be supplemented by rations of corn meal, or linseed and cotton-seed meal; also beets, mangolds, cabbage, or other succulent forage. The time to prepare for winter milk is in the season of seeding and cultivating. When the dairyman has control of the calving time of his cows, and a portion or all of them can be made t come in late in the season, they will give their largest yield of milk in the winter, when butter and milk bring nearly two prices. With a little enterprise and proper fixtures, the production of winter milk and butter can be made to pay handsomely. Prices show a new and pressing want. Let the dairymen meet it.

CONNECTICUT.

Improvements in the Harvest Field.

Does the reader recollect his feeling when he first saw the horse-reaper move into the field and actually "knock" the grain into sheaves so rapidly that the smartest binder could not keep up with the work. The first great Exhibition or "World's Fair" was held in London in 1851, and there the first really successful Reaper was shown. We recollect a letter from a sprightly American lady which reached us — of all places in the world—in what is now Arizona. She said, "When I saw the surprise of the English farmers at the working of our American reaper, I felt a little disappointed that the machine had not an attachment to turn out hot biscuits." But American ingenuity was soon at work upon an "attachment" compared with which the production of "hot biscuits" would be mere child's play. When the Reaper could throw off the grain in gavels ready for the binder, the next step was to make an automatic binder, so that the machine could deliver the grain in sheaves. We shall probably never know the vast amount of inventive genius that was devoted to the production of a binder, or of the many failures that preceded the day when, at the fair, we saw a Reaper bind its grain and throw the sheaf aside to be ready for the next. It seemed then that perfection had been reached. The grain was not only cut, but it was bound so securely with wire that the machine threw off its sheaves, as if to show how thoroughly they were bound. But the reaping and binding is not all of the wheat harvest. The threshers had a word to say, and threshers are for a time the masters of the situation. They found the wires difficult to cut; the pieces of wire would get into and derange the thresher, and more than all, cattle would die from eating straw and bits of wire together. The wire binder was a great thing, but it was plain that twine must take the place of wire before the Reaper could fill the measure of its usefulness. Now, after many trials and many failures, the TWINE OR CORD BINDER has come. It came in 1881 with the "Champion Harvester" to several farms, but in the now coming harvest, it will be in use over a vast extent of territory. The problem:—How to tie up a bundle of wheat or other grain with a cord is solved. Like all great inventions, the Cord Binder is simple; exactly how the knot is made can only be learned by closely watching the binder in operation. The knot, when finished, is shown in figure 1, which represents the cord at about its actual size. The knot is of a kind that, when the sheaf swells, as it naturally will

Fig. 1.—THE FORM OF THE KNOT.

after it is bound, the tighter it will hold. In the mechanism that makes the knot, the "Bill Hook Knot-Tie" (fig. 2) plays an important part, and pulls the loop to its place as readily as if it had an intelligence behind it, Indeed this, and all other machines that seem to think, as well as work, do have behind them the intelligence of the inventor, which has been imparted to iron and steel to endow them, as it almost seems, with intelligent motion. In attaching the Automatic Cord Binder to the "Champion," it has been found necessary to make several improvements in the machine itself. Among these is "The Tucker," which brings the grain into a compact, round bundle, ready for the cord to be put about it; another is the contrivance for ejecting the bound sheaf and getting it out of the way of its successors. All these movements and others are illustrated in the publications issued by the proprietors of the harvester. The general use of the Cord Binder will soon make a demand for cord that may not be readily met. The culture of flax is yet very much restricted. We have no doubt that the extensive demand for twine to use with binders will give a new impetus to the production of flax, especially as machines have been invented to utilize the crude flax fibre. We do not know that cotton cord has been tried upon the Self-binding Reapers, but as that is

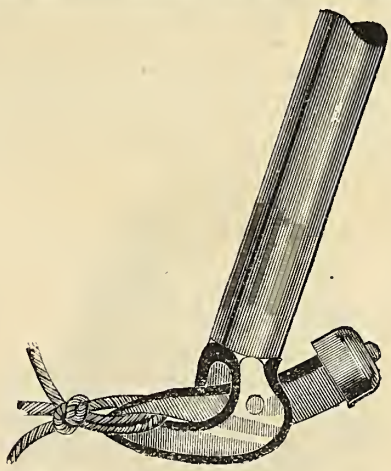


Fig. 2.—THE "BILL HOOK KNOT-TIE."

one of the things that must follow, the sooner that inventors give their attention to the use of cotton cord, the nearer will the Self-binding Reaper reach perfection.

Thinning.—In sowing, experience has shown, that it is better to use an abundance of seed, many times more than is needed to give the desired number of plants. This is done, not merely to make sure of a good stand, but to help break through the surface of the soil. In many cases, the carrot for example, the young plant is very small and weak, and were the seed sown singly at some inches apart, very few plants would force

their way above ground. Experience has taught that the united effort of many seeds will break through the soil above them, and that it is better to sow an excess and thin afterwards. There is nothing in which a novice is more apt to make a mistake than in thinning. He dislikes to destroy so many young plants, and has to learn by experience that a larger crop will result from the same plants thinned to 6 inches apart than if left at half that distance. Do not delay thinning too long, as in the operation the weeds that have come up in the row are to be pulled at the same time and a double advantage gained by the operation.

A Method of Curing Hay.

Mr. C. P. Waring, Essex Co., Va., sends us a method of curing hay which he has used for several years to his entire satisfaction. It

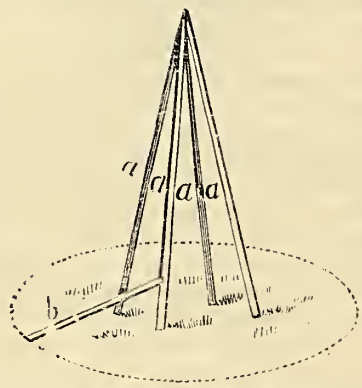


Fig. 1.—THE FRAME.

consists in taking four slender stakes six feet long, *a*, *a*, *a*, *a* (figure 1), fastened together at the upper ends with a loose joint similar to that of an ordinary tripod. One end of the fifth stake, *b*, rests on one of the four legs about a foot from the ground, the other end resting on the ground. The hay is stacked around this frame nearly to the top of the stakes, after which the stake, *b*, is withdrawn, and then the four upright stakes are removed. This is done by two men with hay forks, who raise them directly upwards. As soon as the legs are lifted from the ground

Fig. 2.—THE SMALL STACK.

the pressure of the hay brings them together, and they can be removed with ease, leaving a small stack of hay, as shown in figure 2, with an air passage running from the bottom upwards through the center of the small stack, as indicated by the dotted lines, shown in the engraving.

Preserving Eggs.—D. D. Day, Orleans Co., N. Y., sends us the following method of preserving eggs which he has employed for thirty years: "Take any package, square or round, and put dry bran in the bottom. Set the eggs on end in a layer in the bran, covering them with bran. Put in another layer of eggs, and continue in the same way until the box is filled. The package should be put in a dry cool place. I make it a rule to turn the package 'end for end once a week.'"

Law for Farmers:—Cattle in the Highway.

H. A. HAIGH, L. L. B.

The question whether domestic animals should be tolerated in the highways has been much discussed. It is sufficiently important to merit the attention it has received; for it has been stated that the farm fences of the country cost as much as the farm houses and barns. I do not vouch for the accuracy of this statement, but the expense, which is certainly very great, is occasioned far more by the necessity of fencing straying cattle out, than by fencing our own cattle in.

It is a general doctrine of law in this country that the land in the highway belongs to the owners of land lying along each side. With a few exceptions the American farm extends to the middle of the road, and the public has only the right to pass and repass there in an orderly manner, and the right to keep the way in repair. Every other use of the highway which does not interfere with this public right, belongs to the farmer owning the adjacent land. He owns the soil, grass, trees, stones, and gravel, and everything else upon the surface or under it, and may use them all in any way that does not affect the public right of passage; and the law will protect his ownership in them just as much as though they were inside his fence. No other person has any more right to pasture his stock there than in inclosed lands; nor can he hitch his horse to a tree there without being liable for the trespass, especially if the horse should gnaw the tree or do other damage; he can, in fact, only pass orderly along.

The Legislature of New York State, many years ago, enacted that the freeholders of townships could make regulations as to road fences, and prescribe the times and manner in which domestic animals should be allowed to roam in the highways, and the statute was held to be constitutional by the Supreme Court of that State, though some of the judges dissented. See Griffin *vs.* Martin (7 Barb. 297), and Hardenburgh *vs.* Lockwood (25 Barb. 12). These decisions are directly contrary to the strongly expressed dicta of several judges of the same Court, particularly that of Chief Justice Beardsley in Towawanda Railway Co. *vs.* Munger (5 Denio 264), which was affirmed by the Court of Appeals, though not upon this point. The question seems never to have come directly before the Court of Appeals. It is doubtful whether the statute would be held to be good law by that, the Court of last resort in New York. The Legislatures of other States have not generally gone so far, and the above statement of the law may be regarded as practically universal in this country.

Now with respect to domestic animals, the common law required every man who owned such to keep them upon his own premises at his peril. It did not require him to fence his neighbor's cattle out, but only to fence his own cattle in, or otherwise restrain them. This, too, may be stated as the law quite generally in this country, with the single exception that it has been restricted by local statutes so far as relates to the owners of adjoining lands. For it would be folly to require each to fence in his cattle against the other, as two parallel line fences would be a useless expense. Statutes have therefore generally been passed requiring adjoining owners of improved lands to maintain partition fences in equal shares; and if either is in default, he has no remedy for the trespasses by the stock of the other (Stafford *vs.* Ingersoll, 3 Hill 38).

As to road fences, the laws do not, with the possible exception of those of New York above noted, impose any obligation; and the farmer may, if he chooses, remove such fences, without impairing his right of action against the owners of any domestic animals that enter and do damage by that means.

As a person, therefore, has no right to let his cattle go in the highway, let us see what his liabilities are if he does do so.—In the first place he is liable for the trespass they commit by simply being there unlawfully. He is liable for the grass or other herbage they consume, for the injury they occasion by uprooting the sod or barking the trees, and for any other damage they may reasonably be expected to do. If while there they hook, or kick, or bite any person lawfully using the way, he would be liable for the injury (Barnes *vs.* Chapin, 4 Allen 444) possibly even though he did not know of their vicious disposition. A man once turned his horse into a public place where children were playing, one of whom began switching the horse, which turned and kicked and killed the child. He was convicted of manslaughter (10 Cox 102). The owner of a drove of cattle, which is allowed to stop and feed in front of a farm, is just as much liable for the feed taken as if they did the same inside the fence. The owner of a horse which gnaws and barks a tree in the highway, is liable for the injury, whether the horse is lawfully in the highway or not, and the owner of the tree may remove the horse without becoming liable (Gilman *vs.* Emery, 54 Me. 460).

Notwithstanding the fact that the farmer owns the land of the road, he cannot use it himself for any purpose which at all interferes with the public rights there. He can not put his wood piles, wagons, or pig pens there; and if he does, and the traveller runs into them in the night and is injured, he would not only be liable for the private damages sustained—(Linsley *vs.* Bushnell, 15 Conn. 225) but he may be indicted for obstructing a public way.—From this brief review, it will be seen that the law is strongly against turning the highway into a cow pasture or a barn-yard.

Summer Poultry Houses and Yards.

BY D. Z. EVANS, JR.

Poultry houses should be comfortable for the fowls both in winter and summer, and to make them so is not very difficult or expensive. While some breeders claim a southern exposure as the most desirable, my experience is different. I have, invariably, had better results with houses facing the east. It may be well enough to have them face south in winter, but during the intense heat of summer it is very objectionable, especially where the fowls are kept confined to their yards and houses during the entire breeding season. If, by having them face the east, or even the southeast, there is enough sunshine

both winter and summer, with a very desirable shade during the warm months.

There should be plenty of light admitted in front, through a large swinging or movable sash. These should be so well fitted as to keep out wind and rain whenever desired. In summer, the sash should be entirely removed and the space filled either with a slatted frame, made with ordinary ceiling lath, or else with a neatly-fitting frame covered with cheap, strong muslin. I have found this latter more desirable than the slatted frame, as it admits air and light, but keeps out draughts which might injure the fowls while at roost, especially during the night. The white muslin does not attract the heat, and thus keeps the house comfortably cool. Some breeders use wire netting, but this has the same objection as the slatted frames, with no especially desirable feature. Where additional security is required, something may be placed back of the muslin.

A ground floor in the poultry house, if made about six or eight inches higher than the surface outside, to insure drainage, is the very best that can be had, and is better for the fowls every way than any other kind of floor; it is cool in summer without being damp and unhealthy at any season. A well-made ground floor soon becomes firm and compact, and is as easy to clean as a board, plank, or cemented one. Clayey soil alone can be used for such a floor, or, if this cannot be had readily, fill in first with 4 or 5 inches of clay, after which put on a layer of stiff or fair soil 2 or 3 inches deep, packing down both (separately) with a stout rammer before letting in the fowls. Some poultry keepers put a coating of sand on this earth floor, but it is entirely unnecessary if the clay and soil have been properly laid.

The sides of the poultry house should be made rain and wind proof, slatting or stripping the joints, outside, and lining the house with tarred paper or cheap building felt. This felt, being of close texture and well tarred, not only keeps out wind and water, but it is exceedingly distasteful to lice, mites, and other parasites which are troublesome to the fowls. To secure a freer circulation and admit plenty of fresh air, it is not necessary to have the damp night air blowing directly on the fowls, which would be the case when the windows and doors were left standing open, but have movable panels or slatted openings made at the ends or sides of the buildings, near the roof, unless a small ventilating cupola be built at the center of the roof, which, while it may be made very ornamental, is also much more expensive without being any more effective.

The Yards.—It is desirable to have inclosed runs or yards for poultry, especially where small fruits and vegetables are grown, for a chicken cannot discriminate between gleaning and stealing, and the hens are far better scavengers than gardeners. It is seldom advisable to keep the yard in one place more than a couple of years, for by that time the soil will have been packed down as hard as a plank floor, and be equally as free from grass. The cheapest and neatest kind of a fence is made with common ceiling lath. Good posts, of chestnut or heart cedar, are planted firmly, and two rails, of 2 by 3 hemlock, each 16 feet long, nailed near the bottom and top, are firmly nailed to the posts, about 3 feet apart. Before putting these rails on the post, nail two 6-inch common boards at the bottom, to keep the chicks in, to stiffen the fence, and to add to its hight. This will, with the lath, make a fence a little over 5 feet high, which will be enough to keep in most breeds that are well fed, and if it does not, clipping one wing of each fowl, or covering the yard with tarred twine netting (which can usually be bought cheaply at junk shops, or of any dealer in poultry supplies), will insure their keeping within bounds. Just before nailing on the lath, give the posts, rails, and the bottom boards a good coat of whitewash, and, when it is dry, nail on the lath, evenly and neatly, about two inches apart, after which the lath should be given a good coat of whitewash.

Harness for a Bull.

In answer to an accumulation of inquiries as to the best method of harnessing a bull, we give engravings of plans heretofore recommended by us. As oxen are commonly yoked in pairs, they draw the load mostly by the top of the neck, in front of their shoulders, which is the "drawing point," and when a bull is yoked singly, the harness needs to be arranged that he may draw from this point. A bull cannot work comfortably in a "breast collar," that is, by a heavy strap passing horizontally under the neck; it would interfere with breathing, and soon gall the throat. Figure 1 represents a single wooden yoke made very much like half a common yoke. The ends project, and are provided with strong bolts with hooks or rings for attaching traces. A bull in a cart-horse harness, is shown in figure 2, the collar and hames being simply inverted. For large bulls an ordinary horse collar is not large enough. When the bull is worked before a plow or similar implement, other parts of the harness, except the yoke or collar, and the traces, may be dispensed with. It is well, however, to retain the girth-band, as this will hold the traces in place.

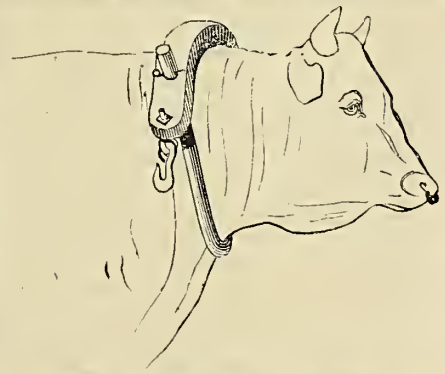


Fig. 1.—SINGLE YOKE FOR BULL.

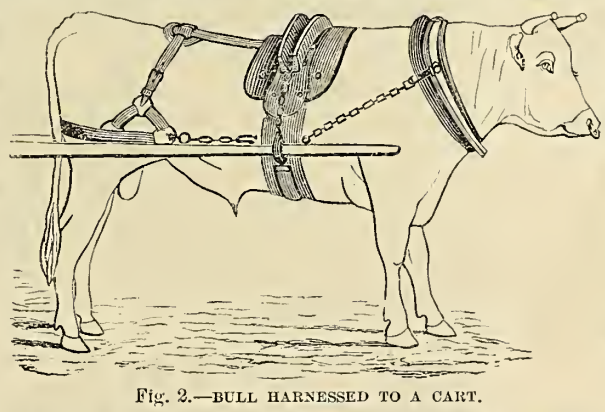


Fig. 2.—BULL HARNESSED TO A CART.

Some Facts About Cutting Hay.—II.

BY W. H. JORDAN, PROFESSOR OF AGRICULTURE, PENNSYLVANIA AGRICULTURAL COLLEGE.

(*Concluded from page 204, May Number.*)

In the table already given, it was shown that there is an increase of dry substance in hay up to full ripening; that from blossoming onward, there is a decrease of protein, of fat, and of ash; that from the first to the last stage of growth there is an increase of carbohydrates, and an apparent decrease in total quantity of the ash and albuminoids. The decrease of ash can be accounted for by the fact that in some of the experiments given, the water was calculated only, which would tend to a moderate over-estimate of the dry matter in the earliest stage of growth. This may also account for the apparent decrease of nitrogenous material. Lack of uniformity of plots may have caused an error, but among so many experiments it would hardly seem probable that the error from this or all other sources had been so uniformly one way as to cause the dry material to seem 500 lbs. more per acre at the first cutting than the real facts would show. It would be necessary to have an error of 500 lbs. to account for the apparent loss of albuminoids in passing from the first to the second stage of growth. There seems to be a loss of albuminoids incurred also by letting the grass stand until considerably after bloom, instead of cutting while in bloom. This rather anomalous showing may be explained in part by the loss or decay of the finer parts of the grass plant as it advances in age.

It should be mentioned that in some of these experiments, at least, more or less clover was mixed with the Timothy, and as the clover matured sooner than the other, it became so dead before cutting as to cause a large loss of the leaves. Every farmer knows that the lower leaves of Timothy often decay from rust and other causes some time before cutting, especially when done late.

So that while there may have been considerable error in various ways tending to augment the apparent yield of dry substance, at the first cutting, and while there is probably a small growth of nitrogenous material in the plant even after the period of bloom, there is sufficient reason for trusting the figures given above to make it questionable whether there is very much total gain in the nitrogenous ingredients of hay because of the late harvesting of the grass. On the other hand, where grass is mixed with very much clover there is great danger of loss by standing until near ripeness.

Experiments the past season, not included in the tables, with Timothy of unusual uniformity and under conditions of a good degree of accuracy, show no *gain*, at least of nitrogenous material, in the late cuttings. The results may vary with the season.

The influence of age upon the kind of nitrogen compounds found in the plant is a matter of great interest, and one much discussed of late. The customary method of determining the percentage of *protein* of cattle foods has been to find out the total percentage of Nitrogen, and multiply this by 6.25, on the assumption that no appreciable amount of Nitrogen exists in any other than the

albuminoid form, an assumption now known to be false. At *no* time during growth, even at ripeness, does it hold true that quite a quantity of non-albuminoid Nitrogen compounds may not be present. Now the significance of this fact is this:—We know that true albuminoids play a very important part in animal nutrition. From them alone can be formed muscular tissue, and the nitrogenous compounds in milk. Rapid production of any animal product requires a liberal supply of albuminoids in the food. No matter how much Nitrogen there may be in a plant, if it be not albuminoid nitrogen we can speak with much less certainty of its food value. The investigations of later years have shown that, in hay especially, quite a percentage of nitrogen is in a non-albuminoid or *amide* form, sometimes to the extent of nearly one-third of the whole amount. These *amides* are in part organic combinations of Ammonia, and in all probability cannot take the place of albuminoids in forming flesh and milk.

The important question for the farmer is:—Does the age of grass have anything to do with the percentage of the total Nitrogen that will exist in this less valuable *amide* form? The first investigations on this point which became widely discussed indicated that a much larger share of the Nitrogen is, in the albuminoid form in old, than in young, grass plants. Kellner found this to be especially so with Timothy. With clover there was little difference between the young and old plant, indicating that the change would be greatest in the true grasses. The opinion has been expressed somewhat, of late, that farmers have been going to wasteful extremes in cutting grass early, and this change of the Nitrogen into a more valuable nutritive form (supposed to take place during the later stages of growth), has been used as an argument in favor of letting grass become more mature before cutting it.

But more extended investigation does not seem to substantiate the earlier ideas. Work done at the laboratory of the Department of Agriculture, at the Conn. Experiment Station, and by the writer, indicates that the percentage of total Nitrogen in the *amide* form, may *increase* after the period of bloom.

	Percentage of total Nitrogen in Amide form.			
	Before bloom.	*Early bloom.*	*Full bloom.*	*Early Seed.*
1. Timothy*.....	21.8	18.4	24.	26.
2. Timothy†.....	28	23.8		26.4‡
3. Timothy†.....	22	18.4		23.4‡
Average.....	24.	20.2		25.3

	Flower head formed.	*In full bloom.*	*After bloom.*	*In seed.*
1. Clover*.....	29.7	37.1	7.7	25.0
2. Clover*.....	30.5	34.2	13.9	27.7
Average.....	30 1	35.7	10.8	26.3

* Department of Agriculture Report.
† Report of Pennsylvania State College, 1881.
‡ But little past blossom.

Certainly the figures in the above table are not favorable to the idea that we can expect the minimum percentage of non-albuminoid Nitrogen after the seeds have appeared. Evidently the subject needs further study, yet it is doubtful if the change in the Nitrogen compounds of grass as the period of ripeness approaches is of the extent or value at first suggested; and as the question at present stands, we cannot assert that the proportion of *amide* Nitrogen may not be as small at the period of bloom as at any other period at which grass would be likely to be cut. We have not looked at all sides of the question until we have considered what is the effect, upon its use by the animal, of those changes in composition which grass undergoes as it grows older.

Now there are two statements that can be made with all assurance of their correctness:—(1) No part of any food that is not digested is of any nutritive value. (2). Hay from early cut grass is more digestible than hay from late cut grass. As substantiating the latter statement, I give the results of an experiment with sheep, using hay from grass cut at three periods of growth. Out of 100 parts of the various ingredients fed, the table shows the number of parts digested.

Time of Cutting.	*Organic Substance.*	*Nitrogenous Material.*	*Crude Fiber.*	*Other Carbohydrates.*	*Fat.*
May 14th.....	76	73	80	76	65
June 6th.....	64	72	66	62	52
June 26th.....	58	56	61	56	43

The mere fact of superior digestibility is no evidence of superior food value, only so far as it shows that whatever may be the differences in the composition of the three kinds of hay, the ingredients of the early cut can be more completely used than is the case with that cut at either period later. We have as a compensation for this decreased digestibility as grass matures, the production of a greater amount of material and a possible change of certain compounds of Nitrogen into the albuminoid form. Undoubtedly this compensation, especially from the former source, more than balances the decrease in digestibility where grass stands no later than the period of bloom, but beyond that time it does not seem as if such can possibly be the case. The matter of palatability is one not to be ignored. In an experiment on feeding early and late cut hay, now being carried on at this College, it is found possible to get 20 lbs. of the early cut hay eaten where only 12 lbs. of the late cut are consumed. The former was cut in bloom, the latter two weeks later.

We have not stated that it is better to mow our fields of grass while in blossom in preference to an earlier or a later time. I believe the weight of evidence to be in favor of such a practice, but at the same time it would be foolish to make dogmatic assertions.

Certainly there are other considerations than the ones I have discussed, but if it were merely a question of quantity, quality, and so of nutritive value, it does not appear that with our present knowledge it would be wise for farmers to change what is now the average period of harvesting hay, viz.: *To cut it while in bloom.*

Value of Farms—Wonderful Increase in 20 Years.—The following summary shows the extraordinary growth in the valuation of the Farms of the United States, in so brief a period as only twenty years:

1860—Census total valuation.....$3,271,575,426
1870—Census total valuation..... 9,262,803,861
1880—Census total valuation.....10,197,161,905

It is to be noted, that 1870 was a time of great inflation in the estimated valuation of all landed property, under a depreciated paper currency, and at an era of high speculation; while in 1880, after a long period of great depression, real estate had hardly begun to feel the large improvement in the money value of almost everything. Probably a fairer estimate of the gold valuation of the Farms would be like this:

1860.....$3,271,576,426	1880.....$10,197,161,905
1870..... 6,000,000,000	1882.....*over* 12,000,000,000

Indeed, if we allow for the very large breadth of wild land changed into farms during two years past, and the rapid increase in value per acre in the leading agricultural States like Illinois, Iowa, etc., the present valuation will hardly fall short of Fifteen Billion Dollars, and the increase in round billions of dollars in 22 years would range something like this: 1860, *Three;* in 1870, *Six to Seven;* in 1880, *Ten;* in 1882, *Fourteen.*

Grooming Horses.

Every horse owner ought to know that good grooming is a great saving of feed. This is demonstrably true, if not in actual economy of oats and hay, at least in the horse's feeling, spirit, action, and ability to travel or labor. It is real economy if we can get more *go* and *labor* by the use of a certain quantity of food with good grooming than without, for then with the same grooming the feed can be reduced. This is understood among horse-men the world over. I seldom groom my own horses, though I like to do it, as does every man who loves a horse, but it involves so much changing of clothes, and bathing, and disguising of odors by scented soap, etc., that I prefer to clean horses and stables by proxy. Lately, however, my good man-of-all-work was down with pneumonia, and I took hold. Of course I meet with new experiences. One is, the knowledge of the value of an old stub-broom. One of the horses was very nervous about having the hind legs cleaned, and the stub-broom seemed almost as efficacious as a curry comb and brush; indeed, the horses liked it. Within two days I could use brush or comb, or anything else I presume, without their flinching unless actually hurt. The broom was prepared by cutting off the corn about four inches beyond where it was corded.

Some months ago I picked up a wire "mane brush," made of steel wires about an inch long, set in a rubber plate in some way. They are quite stiff, but mobile in their setting. The men have not used it, or very little, if at all. They prefer a "root" brush for the mane and tail, and it is certainly very good. I notice that most men, in grooming a horse, draw the brush across the curry comb to remove the dust, with a little more vigor than they draw it over the horse. The result is, that the brush is soon worn out down to the back. I substituted the wire brush above noted for the curry comb, and the result is very satisfactory. The dandruff and dust are removed more thoroughly, and the brush hardly worn at all.

A horse which has been badly treated may be inclined to lift his foot viciously against the groom when working about his legs. When a cow kicks, we put a strap around her just in front of her hips. If she lifts her foot, the action of the stifle-joint is to cause a tightening of the skin in the flank, which is quite painful, and so she does not do it. Now if a man takes a horse's tail (provided it is long enough), and draws it through between the hind legs, and holds the end firmly in one hand just over the stifle, a horse can be controlled on the same principle. It makes a horse a little nervous and restless, however, and should be done so as not to give the animal any needless pain. W

The Bamboos and their Uses.

Having occasion to look up some matters relating to the Bamboo tribe of grasses, we were reminded that, after the cereals and the forage plants, no grasses were so useful to mankind as these. We have often wondered that no attempt has been made to cultivate the larger species in this country; a few, dwarf kinds, six or eight feet high, have been introduced as ornamental plants, but there seems to be no reason why the tall and useful kinds should not have been grown in the southern portion, at least, of our country, and we have no doubt that some may be found that will succeed in the Middle States. We have one native species of the Bamboo tribe, the cane (*Arundinaria*) which forms extensive brakes in the Southern States, and extends to Virginia and Southern Illinois. As several of the gigantic Bamboos grow in the colder parts of Japan, and others are found at an altitude of several thousand feet on the Himalayas, it is highly probable that some species are sufficiently hardy to succeed over a large portion of our territory. There are some 120 species of the Bamboo tribe, divided into about 20 genera; these are mostly natives of Asia, but one has been found in Africa, and several in South and Central America. The larger Bamboos grow from 30 to over 100 feet in hight, and from 6 inches to a foot or more in diameter; like other grasses, the stem is marked by joints (nodes) at which point there is a transverse partition in the otherwise hollow trunk. These joints, from which the leaves arise, in time become bare below and give a peculiar appearance to a forest of Bamboos, as shown in figure 1. The leaves are small in proportion to the size of the plant, being rarely much over 18 inches long, and 2 to 3 inches wide; are clustered at the top of the stem. When growing in an isolated clump, the leafy tops of the tall stems curving gracefully outward, the whole resembles a huge sheaf and is a picturesque object. The flowers are in branching panicles, the individual spikelets often being very small, not larger than those of the Oat, though larger in others; the seed is about the size of a grain of rice. Some Bamboos flower annually; others require 20 or 30 years to become sufficiently mature, and with these, the stems often become so much exhausted that they die after producing a crop of seeds, new stems springing from the roots. On more than one occasion the seeding of the Bamboos has averted a famine; one of these was in 1864, in Soopa, a district on the west coast of India; it is stated that some 50,000 persons came from other districts to collect the seeds, which formed in many cases their sole subsistence. The leaves are used to cover the roofs of houses, to stuff beds, and afford a forage for horses. To enumerate the uses to which the stems of Bamboos are put would be as difficult as to catalogue the uses of wood. In some eastern countries, the stems enter largely into the construction of the house, and of most of the furniture within it. They serve as the masts and spars of the Chinese junks, and when split are the material of the sails, while the rigging is made from the fibres. Indeed, stems of different kinds and sizes serve from walking canes and sticks for supporting plants, up to nearly every purpose for which we employ scantling. The joints in the larger stems are from one foot to over two feet in length, and from 4 to 12 inches in diameter. These (fig. 2) are sometimes nearly solid, while in others the hollow portion is much larger. They are converted into a great variety of receptacles, for solids and liquid, and serve as baskets, boxes, barrels, jugs, etc. Split in various degrees of fineness, the stems afford the material for mats, blinds, screens, etc.; the fibre makes strong cordage, and is good paper stock. The stems even afford an article of food, the young tender shoots being cooked and eaten. Some of the more tropical Bamboos bear, what is remarkable in grasses, a berry-like fruit. An envelope that surrounds the pistil, in some genera, becomes fleshy as the grain ripens, and in one species is, when mature, "the size of a largish pear;" this, when cooked, is edible, though without much flavor. Though Bamboos grow wild, the Japanese and Chinese at least, do not trust to chance for a supply of so important a plant, but cultivate it; in their languages are treatises entirely devoted to Bamboo culture.

1.—A FIELD OR FOREST OF BAMBOO.—*Engraved for the American Agriculturist.*

Since the above was in type, we had a conversation with a young Japanese friend upon the Bamboo. He informed us that a year or two ago a relative of his sent something like 200 different varieties of Bamboos to our Department of Agriculture at Washington. Inquiry was made at the Department concerning these plants, in order to learn where they had been planted, and what success had attended the experiment. Reply came from one of the officers that all that was known about the Bamboos was the fact that they had been received. The former Commissioner, it is supposed, sent or took them to some Southern State, but there is no record of the matter at the Department. If any of our Southern friends know of where these Bamboos were planted and how they have succeeded, we shall be glad to hear from them.

A New Class of Grape Vines—Tuberous Rooted.—Cochin China, which has within the past few years added many valuable flowers to our gardens, now promises a decided novelty in the way of grape-vines. The gardener in charge of the government garden at Saigon, the capital of the French possessions in that country, has made known some remarkable grape-vines found there. As they are mentioned as "vines," we infer that there is more than one species or variety; they have tuberous roots and annual stems, their manner of growth being described as similar to that of the Hop. The vines are said to run from 30 to 50 feet, and to bear clusters their whole length. The gardener, referred to, speaks of the fruit mainly with reference to its wine-making qualities, and merely incidentally states that, where he has added lime to the soil, the grapes are "very good." It appears that similar vines also grow in Soudan, in Africa, as one of the large French seed-houses advertises seeds from both countries. The tubers are now said to be on the way, and are expected to be soon on sale. We have arranged to receive some of these, and hope to thus in due time ascertain whether these singular herbaceous, tuberous-rooted vines have any value in this country.

Are House Plants Injurious to Health.—The old notion that house plants render the air of a room impure is so generally believed that a number of questions on the subject come to us very often. That plants at night may take up oxygen and give off carbonic acid, a poison, is well known. But a great many plants will not vitiate the air of a room to the extent that will the burning of a small lamp or the breathing of a single person. Practically, the effect of

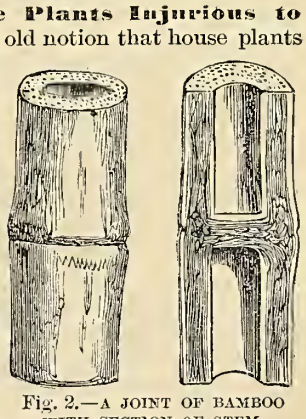


Fig. 2.—A JOINT OF BAMBOO WITH SECTION OF STEM.

house plants in this respect amounts to nothing, and need cause no concern. Invalids are often very sensitive to odors, even those that are not noticed, or are acceptable when one is in health, may be very unpleasant in sickness Flowers which have strong perfumes and other marked odors should not be present in the room of a very sick person.

What is Cardoon?

A friend remarks: "I always see Cardoon in the seed catalogues, but never anywhere else. What is it?" It would not be satisfactory to reply, that Cardoon is own brother to

TWO BUNCHES OF CARDOON.

the Globe Artichoke, as that is nearly as rare in this country. Both are species of *Cynara* (the ancient Greek name), and are closely related to the Thistles. In appearance they are much like thistles with enormous flower heads. The Cardoon (*C. Cardunculus*), was introduced into Europe from North Africa, over two centuries ago, and though very popular on the continent, has been little cultivated in England or here. It is biennial, producing only a tuft of leaves the first year, and throwing up a stalk, and blooming the next. In good soil, the leaves will grow 3 feet or more high, with large, very thick, fleshy leaf-stalks. Some varieties are exceedingly prickly, while others are nearly spineless. The seeds are usually sown in the bottom of a well-manured trench, about a foot in depth; they are thinned to 18 inches, and when well grown the leaves are brought together and bound closely with a hay band to exclude the light and blanch the stalks, which requires about three weeks. The leaf stalks become very tender and crisp, and need careful handling, as they break readily. The appearance of the blanched Cardoon is shown in the engraving. The stalks are first boiled until tender, when the outer skin may be readily removed. They are then cut up and dressed in a variety of styles, with brown or white sauce and often with cheese. Those who become accustomed to Cardoon abroad are very fond of it. Those who eat the tubers of Jerusalem Artichoke, when cooked, will like Cardoon, the flavor being somewhat similar, though less marked. The leaves of the related Globe Artichoke are sometimes blanched, when they are called Chard, and used in the same manner as Cardoon.

The Uses of Insect Powder.

Last month, the plants affording the Insect Powder were described, with notes on their cultivation. When the "Persian Insect Powder" was first introduced as an article of commerce, its application was mainly restricted to the destruction of cockroaches in houses. The powdered flowers, as imported, were blown into the various cracks and crevices, by means of small bellows, and was found very effective, if not in destroying the cockroaches, at least in driving them from their retreats, and in so stupefying them that they could be swept up and burned. Through the experiments, mainly of Prof. Riley, this powder has been found to have a much wider application as an insecticide than in the original method of blowing it in the form of dust, which is only practicable in the house. In the circular issued by the Department of Agriculture, these methods are described in full. Besides its use in the powdered form already mentioned, are its application as a fume, as an alcoholic extract; the stirring the powder in water, and as a tea, or decoction. Some two years ago our correspondent Jean Sisley, of Lyons, France, sent us some pastilles of this insect powder, which he stated had been very efficacious in ridding rooms of mosquitoes, flies, and similar insects. One of these pastilles burned in a closed bedroom, early in the evening, was said to destroy all the insects, while the odor would not be at all offensive. These came too late to be tested that season, and were afterwards overlooked. The circular of the Department mentions the use of the fumes of the burning powder for freeing rooms from insects, and also to fumigate furs and other materials likely to be infested. For application of the powder to insects upon plants in the open air, some of the liquid forms may be adopted. A tincture of the powdered flowers may be made, by treating with alcohol, or by employing an apothecary to make it by the method known as "percolation," an alcoholic extract or tincture, containing the properties of the powder in a concentrated form, may be produced. From half an ounce to an ounce and a half of such alcoholic extract mixed in two gallons of water, and applied by a garden syringe or pump, has been found, according to the circular of the Department, very destructive to the cotton-worm, and will no doubt be equally so on all soft-bodied insects. If the powder is simply stirred in water, in the proportion of half an ounce to two gallons of water, and sprinkled upon the plants, the application will kill all soft caterpillars. Another method is, to make a tea, by pouring boiling water upon the flowers, which for this use need not be powdered. This decoction sprinkled upon plants infested by insects, has been found very useful. Where the Pyrethrum plant is cultivated, probably this last named method, which will allow the flowers to be used without first powdering, will be found one of the simplest and best methods of using it.

The Best Soil for Quinces.—The writer recently came into the temporary possession of an old fruit yard and garden, that had been somewhat famous in its day as a quince orchard. Though neglected for years, and most of the other fruits, large and small, had died out, the quinces held their own, upon the principle of the "survival of the fittest." There was quite a variety of soil on the half acre or more devoted to fruits. A venerable old Virgalieu pear tree stood upon the highest and dryest part, in good condition, apparently as tough as a white oak. Here the quinces had their poorest development. A brook flowed through the premises, with a narrow border of intervale land. The vigor and thrift of the quinces improved as they approached this intervale, and were at their best immediately upon the bank, where their feet must have stood in the water for a large part of the year. Through neglect, the borers had had full sway, but as the old stumps died out, new sprouts took their places. There were forty or more quince bushes on this little patch of land, though they had stood in grass and been neglected for a dozen years. The lesson indicated is to select, if possible, intervale land in planting the quince. C.

New Zealand Spinach.

When summer weather fairly sets in, it is difficult to get a crop of spinach. Young plants grow very slowly, and soon form flower stalks, while the leaves become tough and useless. Among a number of substitutes for spinach to be used in hot weather, one of the best we have tried is the so-called "New Zealand Spinach." We say "so-called," as it is not at all related to real spinach; that being a near relative of the Beet. This belongs to the same family with the "Ice Plant" (*Ficoideæ*) often cultivated as a curiosity. Its botanical name is *Tetragonia expansa* (*tetra*, four, and *gonia*, angle, as it has a 4-angled seed pod). It is a native not only of New Zealand, but of South America and even of Japan. Its seeds were first taken to England in 1772, by Sir Joseph Banks, who was with Capt. Cook in his celebrated voyage around the world. The plant is an annual with long-spreading branches, and thick,

THE NEW ZEALAND SPINACH.

fleshy leaves, an inch or two long, of a triangular egg-shape. The plant later in the season is much more spreading than that shown in the engraving, the branches extend in every direction, hence the plants need abundant room. The seeds are slow in germinating, and it is well to soak them before sowing; place half a dozen or so in well manured hills, made 3 feet apart. When an inch or two high, thin to two or three plants in a hill. They are very small at first, and a careless hand may mistake them for weeds. When once started they grow most rapidly.

and the hotter the weather the better they seem to like it. In gathering, take 3 to 6 inches of the shoots; the tender stem near the end may be cooked with the leaves, which should be picked from the tougher parts. New shoots quickly replace those removed, and a few plants will keep up a continuous supply. It is cooked in the same manner as spinach. The unripe seed pods, while tender, are used for pickles.

The Grape Vine in Summer.

Those who grow grapes for profit, or have a large number of vines, will of course have fixed upon some method of training them, and understand how this is to be carried out.

Fig. 1.—SHOOT ON OLD VINE.

All such will do well to take some standard work on the vine as a guide. Where one has but a few vines, and these often grown as much for the shade as for the fruit, he does not usually care to make a special study of the matter; still, by attending to a few simple rules, he can with a very little trouble greatly increase the quantity as well as the quality of the fruit, and at the same time keep his vines in a satisfactory condition. The time for pruning the old wood is past, and the vine now presents a greater or less number of canes upon which at intervals are green and tender shoots, that have started this spring. Of course, we now speak of the vine in general, no matter how it has been trained. As one stands before the vine, he must consider that every one of these young shoots now just growing, will, if left to itself, make by autumn, just such a ripened cane, as that from which it starts. Will there be too many of these canes? Will there be a great crowding and tangling if they all grow? If so, break a portion of them off while they are still young. If a bud produces two shoots, and they are often double, always break out the weaker one. Each shoot on a vine old enough to bear, will appear as in figure 1. Beginning below these is a leaf, with opposite to it a cluster of buds: a short distance above, another leaf with another cluster of buds, but their positions reversed, the second leaf being over the first cluster, and so on, alternately, some vines producing three and some four clusters of buds, and beyond these, instead of buds, there will be merely a tendril opposite the leaf. Observe that the whole growing vine is only a repetition of this; a portion of stem, a leaf with opposite a cluster or a tendril, another length of stem, a leaf and a tendril, or cluster, and so on to the very end. That point of the shoot, where the leaf and opposite tendril or cluster are attached, is called the *node*. A single node is shown at figure 2. When it is understood that every vine, however confused it may appear, is made up merely of repetitions of that which is shown in figure 2, the matter becomes much simplified. The tendril may be the stem of the fruit cluster, or it may be bare and used to hold up the vine. When it first appears, the tendril is nearly straight, except at its slightly hooked end, when that end comes in contact with, and catches hold of some object, it then coils in a manner most interesting to witness. When it bears fruit, there is often, as in figure 2, a bare branch ready to catch hold of something, and help sustain the weight of the cluster.

Fig. 3.—SHOOT WITH LATERALS.

Fig. 2.—A NODE OF A GRAPE VINE.

It will be observed that in the axil, the place where the leaf-stalk joins the shoot, two buds will soon appear, which we will notice presently. If the shoot in fig. 1 is left to itself it will continue to grow and often reach several feet beyond the uppermost cluster. With every vine, no matter how it may be trained, it is a safe rule to stop the growth after one or two leaves have been formed above the uppermost cluster. If any one is afraid to do this, let him try it on a few shoots and leave the rest to grow. This should be done while the shoot is still tender, and its end can be pinched by the use of the thumb and finger nails. The leaves remaining upon the shoot will soon become much larger and thicker, while the fruit will also grow much larger than if left unpinched. This is a general rule to be followed on all bearing vines. In fig. 1 a line is given to show where to cut in case the vine is disposed to bear too much, a point we need not consider now. Soon after the top of the shoot has been pinched, side shoots will appear, as shown in fig. 3. These side shoots are for convenience called *laterals*, and one will appear from the axil of each leaf. If these are allowed to grow the vine will soon become a tangled mass; but they must not be broken off, altogether, but should be checked by pinching. As shown in fig. 2, there are two buds in the axil of the leaf; the lateral comes from one of these, and if this lateral be broken out, the other bud will start into growth and produce another one; this is to be avoided, as that bud may be needed next year; consequently when the lateral has produced two or three leaves, it is pinched off, leaving only its lower leaf; a shoot may start from the axil of that leaf; if so, that is to be pinched again, in the same manner, back to its first leaf. This is made plain by fig. 4, which shows a lateral that has been pinched at *a*, and a second growth has started which should be pinched back to its lowest leaf at *b*. Although it takes some space to describe these operations, they are really very simple, and if one will observe the directions the fruit will be greatly improved, and the vine prevented from becoming a confused mass of stems and foliage. The pinching should be done while the shoots are still so young as not to require a knife, but only the finger and thumb. Of course all the insects observed should be destroyed.

Staying a Vineyard or other Post.

Mr. Frank Kreiger, of Cuyahoga Co., Ohio, sends us a sketch and description of a method of staying or bracing the end posts in vineyards where wire is used. This method is used by his father, who has had forty-five years' experience in vineyard work. The same method may be adopted for end or corner posts of wire fence, if durable wood can be had for the brace, and the amount of digging be not too great. Mr. K. gives the following description for a vineyard post, 8 feet long. Bore a two-inch auger hole about 4 inches from the lower end, and into this fit a strong stick, 3½ to 4 feet long. Dig the post hole about 3 feet deep, according to the firmness of the soil, with a side trench of nearly the same depth, for the stay piece. Set the post in and fill in the soil 3 or 4 inches above the cross-piece, and lay over it two or three large stones, and fill up with earth. This method saves the necessity of wire or other above ground braces, which are always in the way. The engraving explains it.

Fig. 4.—MANNER OF PINCHING.

STAYING A POST.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

The Wastes of Country Houses.

BY L. D. SNOOK, YATES CO., N. Y.

Much is written at present about the sanitary condition of city houses and defective plumbing, sewer-gas and sewage are often mentioned in city papers. The disposal of the wastes of a country house is of as much importance as that of a house in the city—in fact more so, since there is no general

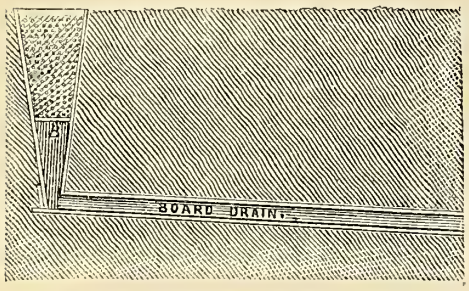


Fig. 1.—CROSS SECTION OF DRAIN.

system of sewers as there is in cities, and each house must provide for itself. Many a neat looking country house rarely has its front door opened, and when it is opened, it is, alas, too often, to allow a little coffin to be carried out; the neighbors who have gathered in a sympathizing manner, talk in an undertone of diphtheria, scarlet fever, and reverently speak of the "dispensations of Providence." Were these neighbors to go around to the back door they would perhaps find its surroundings—just like their own. The kitchen slops have been, ever since the house was built, thrown out from the door. The kitchen sink may empty its contents into a shallow drain, which leads no where, but the water soaks away as it may, and in either case the soil all around the rear of the house is reeking with slop water. No healthy growth of tree or plant can be had here, and what is worse still, the well is usually not far off. As there is a reciproeal relation between all the members of the body, so there is a direct relation between the back door and the occasional melancholy openings of the front door. There is no problem—such as the simple one of 2 and 2 make 4—more thoroughly fixed and established, than that the health of the family, whether in the costly city mansion or in the humblest cottage or log cabin, depends upon the manner in which the wastes of the family occupying mansion or cabin are disposed of. It is not necessary to argue the matter. Now, this very month, before the hottest days come on, house slops must be carried off, and all throwing of them on the ground *absolutely prohibited.* To do this now, will cost far less than to pay the bills of doctor and the undertaker, to take even a low view of it. But what shall we do? Get rid of the slops—send them off to a distance, away from both the house and the well. Two things must be done; provide a cess-pool in a suitable place, and a tight drain to take all liquids to it. The cess-pool should be at least 40 feet from either house or well. Make it large, as the larger it is, the longer it will last.

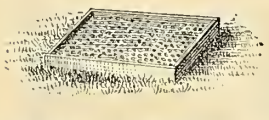


Fig. 2.—TOP OF FUNNEL.

A rude way is to get a large cask, which need not be tight; such as hardware is packed in will answer. Knock out both heads, and dig a hole deep enough to hold it; of course, provided the soil is loose and sandy. Place the headless cask in the hole with its top at least three feet below the surface. Into this put all the accumulated stones, bricks, and all such material as may be at hand, to at least half fill it. Arrange to connect the drain with it, lay some stout planks across the top, and cover them with earth. In order to make repairs if needed, take the direction and measurement from some permanent point, so that it may be found.

THE DRAIN.—This may be made of boards, six inches wide and free from knots; they are to be nailed together to form a square drain, using tar, or thick paint, at the joints. If the interior has several coats of oil or crude petroleum, it will be all the more durable. To receive the slops, a long and narrow funnel should be made as in figure 1. This is about 14 inches square at top, and tapers below to the size of the drain. A piece of plank, in which numerous half inch holes are bored, is placed at *B*, above which the funnel is filled with small stones. The upper end of the funnel has a square frame projecting about four inches above the surface as in figure 2. The waste water is to be poured into this frame, and the small stones will arrest all solid matters, and prevent them from passing into the drain. It may be desirable to have the kitchen sink discharge into the drain, the funnel of which may be in this case quite near the house, as shown in figure 3. It is well to cover the top of the drain with a screen of wire. It has been assumed that the sole object is to get rid of the house slops. If these are to be used in the garden, the cess-pool should be located with reference to this end, and it must be made water tight with its top well below the reach of frost. In some soils, an excavation of the desired size may have its bottom and sides covered by a coat of cement plastered directly upon them. Where the soil is not sufficiently firm to admit of this, then the walls and bottom must be bricked and made water-tight by a coating of cement. The top should be covered with strong planks. A pump may be arranged to

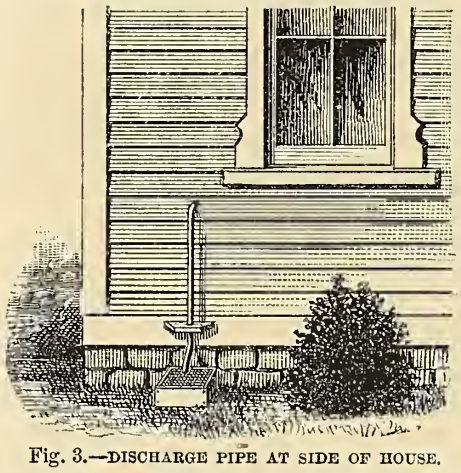


Fig. 3.—DISCHARGE PIPE AT SIDE OF HOUSE.

raise the contents of the cess-pool, which, by cheap troughs, made of two boards nailed together, may be conveyed to every part of the garden, and in one season's increased produce repay all outlay.

[The above omits one important point. As described, the drain furnishes a sort of conductor to convey noxious gases from the cesspool back to the house. This source of trouble can be guarded against by putting a trap or downward bend in the drain, near its upper end, to always be filled with the fluid, and prevent the return of gases. It may be partially remedied, and only partially, by having the drain enter near the bottom of the cesspool, and always leaving it covered by the liquid in the receptacle. The materials caught on the filter of stones must be almost daily cleaned out in hot weather, or they will decay there.—ED.]

A Favorite Way of Cooking and Dressing Beefsteak: Heat a flat spider or frying-pan thoroughly over a hot fire. Then unless the steak is tender, pound it well, using a hard-wood board, and a common potato masher, striking with the edge so as to break the meat fibre. Sufficient pounding will make a tough steak seem quite tender. When the meat and spider are ready, quickly cover the spider bottom with the meat, and let it sear well, but turn before it burns. It is well to cover the spider to retain the heat. Do not salt until the meat is nearly done. When cooked through and salted, add a teacupful of thin cream, and let it come to a boil. Good milk will do if one has no cream, but in this case, spread a little *good* butter upon the meat before adding milk. Use but little, and let it get thoroughly heated. Lay the meat on the platter, and pour this dressing over it. Meat cooked quickly in a hot spider, throws out a fine juice at the last, and this will not dry away or burn so easily, if the spider is covered. While the meat cooks, the cream or milk mixed and heated with it makes more gravy, and has an excellent flavor. It is certainly more wholesome than a dressing of melted butter.

Our Daily Bread.

BY A MINNESOTA HOUSEKEEPER.

The great scarcity, high price, and poor quality of our potatoes, east and west, make it unusually important to have good bread. Potatoes are not very nutritious, and by no means an essential diet; but "meat and potatoes" seem made to go together, the starch of the potatoes balancing the fibrine of the beef or other lean meats. But potatoes are over four-fifths water, by weight, and easily dispensed with when we get used to it. We can also live comfortably, healthfully, and satisfactorily without meat, if we have nourishing bread pleasant to our taste. Many think we have this in Graham, but genuine Graham is hard to find now-a-days. It has been suggested that we secure small hand-mills, strong coffee mills, for instance, and grind our own wheat. This would be well, if we could not do better. But I would gladly dispense with bran as an article of diet. It affords no nourishment that is not now perfectly obtained by the new process of grinding, and it is quite doubtful whether all of the food elements once left clinging to the bran could easily be digested and assimilated when taken in that condition. It is claimed by some of our best authorities that bran, in its haste through the digestive organs, carries along with it much that would be assimilated and used as good building and strengthening material. This action of the bran makes Graham flour an excellent food and medicine for pampered appetites. The poor and ill-fed cannot afford to eat it.

But we need something besides white flour in our daily bread if we rely upon it as food—especially if we would have gems. Though very light white flour gems can be made, much as you would make muffins, they would prove a "slender staff of life."

I was glad to note in the April *American Agriculturist* the call of our English neighbor for gems. I suppose he wants the genuine light and sweet cold water Graham gems, now only a pleasant memory to most persons who tasted them years ago, before the adulteration of Graham became common. We have been using for a few weeks a flour purporting to be the whole wheat ground to a fine flour with only the bran removed, and it professes to contain all of the nourishment originally stored in the wheat in a form easily assimilated. I believe in the theory, but lost some enthusiasm when testing it practically. It had an odd taste, especially when made with yeast, which we called bitter at first. But we have got used to it, and prize it especially on account of the delicious water gems it makes. After a month's trial we deem it a very satisfactory food in all respects. We liked our water gems from the first, and have hardly eaten a breakfast without them for over three weeks, liking them better and better as we mix them thinner and thinner. I find the best proportions three cups of water, and four cups of sifted "Entire Wheat Flour," sifted in a little at a time. Have the gem irons very hot, butter them, fill nearly level with the batter; bake partly on the oven rack, and partly on the bottom, baking thoroughly. Sweet milk is better than water, but the water-mixed gems are a daily delight in our house just now. They rise but little, the flour swelling in the thin batter as it cooks; they are not the least sticky when fully done, but have a fine spongy texture and excellent flavor. Those unused to water gems may prefer using sour milk; with eggs freely added, the best possible pancakes are made from this flour.

I disagree with those who think that white bread

is necessarily "flat and insipid," though most of it is so. There always should be a decidedly sweet taste to light bread from fine white flour. Sometimes this is concealed by too much salt, which many of us never add while preparing and cooking flour. Sometimes the yeast overpowers all other flavors, but usually the sweetness is lost by excessive fermentation which often takes place in the effort to have the bread very light.

Our English neighbors are making a great stir about a much needed Bread Reform. They want something better than the pale insipid bread of their bakeries. The Bread Reform League members embrace many well-known influential names. They recommend no particular brand of flour, but *they* insist that bread made from wheat, our best cereal, shall contain all of the nourishing elements of the wheat. Their pamphlets indicate that their Graham or coarse bread is no better than what we have here. The several companies in this country furnish more nutritious flour than that common in our markets, better than the ordinary patent and straight white flours, and the mixtures called "Graham." Sometimes five bran coats are removed, and sometimes only one. I have tried several kinds, and am now in a mood for experimenting farther. Habit is strong, and those sending out flour containing elements unfamiliar to the consumers of white flour bread, should urge a long trial before judgment is pronounced.

Reading for the People.—Book Clubs.

N. S. TOWNSHEND, COLUMBUS, OHIO.

One of the objectionable features of many country homes is the comparative absence of instructive books, particularly of the live fresh books of the time. In cities and large villages, libraries are formed from which persons who are unable to purchase books may obtain good reading at small expense. In the country the families of many hard-working farmers have little opportunity to see standard works, either literary or scientific. Perhaps these families see a weekly paper, but such papers are usually devoted to the advocacy of special views, or interests, and the family that sees only a single paper will be likely to illustrate the adage that "a little learning is a dangerous thing." Entertaining and profitable reading is one of the great needs of the country and farm life, and therefore any plan by which this need can be supplied is worthy of consideration.

Many years since it was the writer's fortune to live in a rural district, far from city or village library; at the same time it was his privilege to enjoy the benefit of an arrangement for obtaining books which was so simple, economical, and satisfactory, that he gives a sketch of it. The plan was not original; other places have had the same; perhaps it was not the best that might have been devised; but it answered an excellent purpose.

In the township of Avon, Lorain Co., Ohio, about A. D., 1834, a few neighbors who felt the need of other reading for their families than that supplied by weekly papers, associated themselves under the name of the "Avon Reading Society," afterwards changed to "Avon Book Club." A president and secretary were chosen, terms of membership agreed upon, and provision made for annual meetings, and the adoption of by-laws. At the outset 17 persons joined the association, each paid an entrance fee of $2, and agreed to pay an annual fee of $1. By the rules each member could propose one book for purchase; if of general interest, and not too expensive, it was approved by vote. When as many volumes had been proposed and approved as the club numbered members, the secretary, who was also treasurer, took the funds and purchased the books. Before their distribution the books were covered with tough paper, and the plan of distribution was written upon the cover; sometimes the books were covered with muslin when the plan of distribution was written upon a blank leaf. At the top of the cover or page was written, "To be kept twenty-one days," below this three lines half an inch apart were ruled from top to bottom near the center of the page, dividing it into four spaces, a broad one on either side, and two narrow ones between. In the broad space on the left hand the names of members were written, not alphabetically, but in the order of their residences from east to west, beginning always with the name of the member who had proposed the book. The name of the secretary appeared twice; first according to his residence and again at the bottom, so that all books might finally be returned to him. In the second space, to the right of each name, the date when the book was received was written, in the next space the date when forwarded, and in the space to the right of the dates remarks were recorded, if the book had been injured or kept too long, for which the rules prescribed a small fine. The distribution of new books was made to all the members upon the same day, to every member one book; after three weeks every one forwarded his book to the member whose name was next below, and upon the same day he received another book from him whose name was next above. These changes were usually made on Sunday, for, although the members of the club did not all attend the same place of worship, the churches they did attend were not far apart. The original number of members was found convenient because seventeen volumes, each kept three weeks, would all come again into the hands of the secretary in fifty-one weeks, and be ready for sale at the annual meeting. When the number of members was less or more than seventeen, no serious inconvenience was experienced, for in one case the meeting and sale were held sooner, and in the other case the meeting was delayed until all the books had completed their circuit. The books, after being read, were sold within the club to the highest bidder, often bringing considerably more than half the original cost. If less was offered for a volume than one-third its cost the member by whom it had been proposed was by the rules expected to take the book at one-third the cost. The money derived from the sale of books, together with the annual fee of $1 from each member, provided funds for the purchase of new books, which were proposed, approved, bought and distributed as already stated. If a less sum than usual was received from the sale of books, or if more expensive books were to be bought, a small assessment made up the deficiency. The books bought by the club embraced considerable variety, History, Travels, Biography, Poetry, Fiction, Agriculture, and Science were all included. The most popular books, as well as those most criticised, were likely to be bought; by this course the club kept along with the progressive thought of the time. In order to learn what books were published, and what would be desirable to purchase, arrangements were made for receiving catalogues from the leading publishers. Some members of the club also took quarterlies or monthlies, and had the benefit of their reviews and book notices.

The Avon Book Club with little interruption or change has continued in operation to the present time, a period of more than forty years. The pleasure afforded to old and young from the reading of its books, the value of the information conveyed, the mental stimulus supplied to the families that shared the benefits of the club for so many years, cannot be readily calculated. The books sold by the club from year to year have laid the foundation of many household libraries. The influence of the club undoubtedly extended beyond the families of its members, although by one of its rules the books of the club could not be loaned. No result has been more noticeable than the desire it excited in the minds of many of the second and third generation to obtain better educational equipment than their parents or grand-parents had been able to secure. Another effect upon some of the young who were directly or indirectly benefited by the club will not excite surprise,—many of them learned of broader and more profitable fields for their activity. Some entered the professions, some went to other parts of the State or to other States, and became successful business men; some have been identified with the benevolent and educational institutions of the State. Some have done service in the Legislature of Ohio and other States, and in the Congress of the United States. Some responded promptly to the call of the country at the outbreak of the Civil War, and of these a few whose memory is tenderly cherished found rest in soldier graves. It must not be inferred that the club lost its interest in Agriculture; as proof that it did not, the fact may be stated that two of its members have been members of, and one the president of, the Ohio State Board of Agriculture.

Perhaps it will be thought that a readier way to supply a community with reading would be to raise the necessary funds, and at once establish a good library, from which each contributor might draw when and what he pleased. Doubtless a good library has advantages, but the plan here described has the important feature of requiring but little money at the outset, so little, indeed, that there is probably not a single neighborhood in the whole country in which the necessary amount could not be raised. This plan has an advantage in inducing its members to read more regularly and more broadly than many would if left entirely to taste and inclination. Unless some better plan can be suggested for the tens of thousands of country places which have no library privileges, the plan above described may answer a valuable purpose, and be worthy of general adoption throughout the country.

Barrel Frame "Easy Chairs."

We have given in past years quite a variety of forms of easy chairs, made from barrels, boxes, hollowed logs, etc. In one of our exchanges from al-

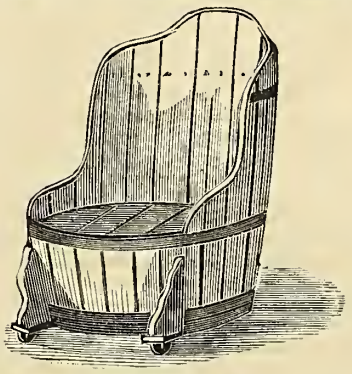


Fig. 1.—THE CHAIR FRAMED.

most exactly the opposite side of the world (the *Illustrated News* of Sidney, Australia), we find engravings of chairs differing a little from any we have given, and we change these somewhat to the forms here shown in figures 1 and 2. A large barrel or small hogshead with iron hoops, is cut to the form shown in figure 1, the hoops being first riveted to the staves. Strips or cleats nailed on the inside at

Fig. 2.—THE CHAIR COMPLETE.

any desired hight, support the upper barrel head as a seat. The barrel is mounted on a frame of two pieces of wood with casters underneath. A broader firmer base would be formed of three or four pieces. The supporting brackets are added in front.—Fig. 2 shows how the whole may be upholstered with calico or any other material at small cost. All the above work of "Easy Chair" making may be done home and involve very little expense.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

As many of my young friends have asked me to tell them about plants and flowers I am very sure that they gave some attention to what I said last month. I took the Buttercup as a starting point, for the reason that there is scarcely any place in the country, north, south, east or west, even to the very shore of the Pacific, in which some kind of Buttercup can not be found. In the last talk I tried to make you understand one very important fact — that all flowers, however different and unlike they may seem to be, are all made upon one general plan, and illustrated that plan by a figure of the Buttercup. Now, to look back a minute upon last month's Talk. It was shown that the Buttercup had first (and best seen in the bud), a set of five green leafy parts, the *calyx*, of which the separate parts are *sepals;* next above these five larger and more showy parts (in the Buttercup usually bright yellow), the *petals*, which together make the *corolla*. Next within the corolla, there are (in the Buttercup) many bodies, called *stamens:* these consist of a stem (the *filament*), which has at its top a two-lobed case (the *anther*), that produces a fine dust (the *pollen*). In the very middle of the flower are some differently shaped parts called *pistils*. It was also stated that these pistils, after the pollen had acted upon them, would produce seed pods, each in the Buttercup producing a single seed. Why do I repeat all this? Because, if you learn this well and understand it, you will learn a great deal about plants, and find, after you have understood the Buttercup, its parts and their uses, that you will be able to understand other flowers. You will recollect that in the Buttercup all of the petals were alike, of the same shape and size, but the flower of the Pea was brought in to show that, though there might be the same number of petals, these could be so unlike in size and shape as to make the flower of the Pea very unlike that of the Buttercup, and the same is true of many others.

Fig. 1.—ANEMONE FLOWER.

Fig. 2. STAMINATE WILLOW FLOWER.

Now please attend once more, and look at your Buttercup flower, or if you have none at hand, look at the engraving given last month, but always have the *real* flower when you can get it. I know you do not like repetition, but it is the only way to make sure that you understand a thing. Then, with Buttercup flower in hand, note first, the green *calyx;* next the yellow *corolla;* next, the many *stamens;* and in the very center, a number of *pistils*, and observe that all these parts are attached to the end of the stem, called the *receptacle*. Just here I wish to repeat what I said last month, that these are *all* the parts that any flower has, and no matter how unlike to those of the Buttercup they may seem. *Every* flower, if carefully examined, will have either all, or some of these parts in one shape or another. There are many ways in which these parts will differ; the Pea given last month, shows one of these. Bear in mind now these different parts; the calyx, the corolla, the stamens and the pistils as shown in the Buttercup. Here are four different series of parts, and one or more of these may be absent. Let us take an own brother to the Buttercup for example, the *Anemone* or "Wind Flower," (fig. 1), one or more kinds of which will be found almost everywhere among spring flowers. You will find that this has but one series of floral envelopes (see last month), and though this is white and petal-like in all the Anemones, it is regarded as the *calyx*. In most flowers there is both calyx and corolla, but when there is but one of these it is called the calyx. It was stated last month that the calyx and corolla were called the *floral envelopes*, because they surround the other parts, but they are not essential. The corolla and the calyx may both be absent, but if the stamens and pistils are present, the flower will perfect its seed, because it has these *essential parts*, the stamens and the pistils. But some flowers go still further than this, and lacking both calyx and corolla, they in some plants have only stamens, and in others only pistils. You can find examples of this in the Willows. The "Pussy Willows," as those are called, that produce their flowers very early in the season, before the leaves appear, will all be gone by the time you get this, but there are many willows that bloom this month, after their leaves open, and you can no doubt find some of these on the margins of swamps, and may examine their flowers. The flowers of the Willows are in what are called *aments*, or *catkins*. There is no calyx or corolla, but each flower is merely a couple of stamens (fig. 2), or a pistil (fig. 3), with a leafy appendage called a bract, and these bracts together on a short stem make the catkin (fig. 4). Here you have flowers without calyx or corolla; indeed in some trees only stamens, and in others only pistils are borne—yet they are just as much flowers as those of the Buttercup—only they have not all the parts. This illustration will show you how flowers may vary by not having all the parts. Now let us look at another kind of variation. In the Buttercup given last month, it was shown that the petals were all separate; let us now suppose that the petals, instead of being broad at the top were pointed, and grew together by their edges for half way up; we should then have such a flower as that of the Tomato (in fig. 5). Where the petals are united for their whole length, we get a great variety of tubular and funnel-shaped flowers, of which the Morning Glory (fig. 6) will answer as an illustration. Not only do the petals of the corolla unite, but the sepals of the calyx do the same, and we get a great variety of forms from this cause. Still another set of changes is produced by the union, or growing together of those parts, which we have seen in the Buttercup are separate. The calyx and corolla may grow together in one piece, and the calyx, corolla, the stamens, and even the pistils may all be united. It is now too late for you to examine the apple-blossoms, and you must take our engraving instead. If you were to take an apple blossom and cut it down through the middle, (as in fig. 7), you would see that the calyx and all other parts were for some distance all grown together to make a solid mass that in ripening, becomes the fruit which we know as an apple. You will find a great many other variations from the general plan given in the Buttercup, but if you recollect that the parts of each set—as calyx, corolla, etc., may differ in shape and size (as shown last month in the pea), that the parts in each set, as the petals, the sepals, etc., may grow together among themselves, or that the parts of one set may be attached to those of another set, as shown in the apple (fig. 7), you can see what a great variety of forms may be produced, and yet all of them be according to one general plan. There is one set of flowers that I have no doubt will puzzle you, at first. I refer to those like the Sunflower and the common Ox-eye Daisy, or White-weed. Flowers of this general structure are to be met with, from the common May-weed by the road-side to the enormous Sunflower. Flowers of this kind are troublesome to beginners, until they learn that they are not single flowers, but collections of flowers.

Fig. 3.—FEMALE FLOWER. Fig. 4.—WILLOW CATKIN.

Fig. 5.—TOMATO FLOWER.

Fig. 6.—MORNING GLORY FLOWER.

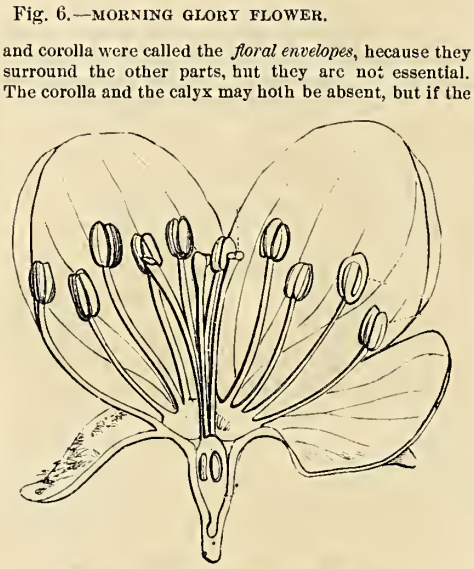


Fig. 7.—APPLE BLOSSOM CUT IN TWO.

Fig. 8.—A HEAD OF COMPOSITE FLOWERS.

Figure 8 shows the general appearance of these flowers, so called, with a dense mass in the center, surrounded by spreading "rays," as in the Sunflower and its relatives. Figure 9 shows a head like that in figure 8, cut apart, leaving but a single flower of each kind in place. The left hand flower is formed as we may suppose by the edges of five petals growing together to make a tube. On the right, at the margin, we have a broad flower which is like the tubular one, only the tube is split open and spread out, to form a more showy flower.

These small flowers, gathered in heads in this manner, will be found very numerous late in the season. They are called *Composite* flowers. In the Sunflower and Ox-eye Daisy you have two kinds, the tubular ones in the center and the flat ones on the margin. In the Thistles, the flowers are all tubular, and in the Dandelion, and several others, all the flowers in the head are flat.

Fig. 9.—PORTION OF A FLOWER HEAD, WITH A "RAY" AND A "CENTRAL" FLOWER.

There is a great deal more that might be said about the wonderfully varied shapes of flowers, but I trust that

these illustrations will show you how all the unusual forms may be traced back to the simple structure of the Buttercup. I can say no more about the shapes of the calyx and the corolla for we must consider the more important changes that take place in the seed vessel or fruit.

Riding Horse to Plow Out Corn.

Wonder if our farm boys of the present day have any idea of how much the improvements in farm machinery have done for *them*, as well as for their fathers! Recently the writer revisited, for the first time in about forty years, the old homestead, and there he saw a man "cleaning" corn with a nice cultivator, drawn by a horse, with handles to guide it close to the rows, and it did the work quite as well as it was done in that same field fifty years ago, by running a plow twice between the rows, and then following with a good deal of hard work with the hoes.—But what came to mind most vividly was the riding of the horse, as, with the narrow plow then in use, and the many stones in the soil, it was as much as the man could do to keep the plow from hobbing side to side and destroying the corn. The boy that rode and guided the horse (that's the writer) remembers, almost with a returning ache, going back and forth, back and forth, all those long hot June days; what trouble it was to turn round at the ends without trampling down one or more thrifty corn hills; and the being often thrown on the horse's neck, and not unfrequently to the ground, when the plow struck a fast stone. How we felt when beginning the first row of a ten-acre field, and knew it had to be gone all over two, often three times during the season, twice in the row.

"Didn't you have a nice soft saddle to ride on?"

Oh, no; the saddle was two or three folds of a horse blanket, with no stirrups. How we boys did have to shift round, first on one side a little, and then on the other; sometimes sitting sidewise, if there was a row known to be clear of stones; sometimes, indeed, one had to go to "choring" or other work for a day, if not into "hospital for repairs." Some boys of to-day know well, by experience, all about the above; but most of them know nothing about it. They can hardly guess how much improvements have done for them.

Two Problems About the Above.

Those corn-fields were usually 40 rods square (ten acres). The rows were three-and-a-half feet apart. The plow went back and forth between each two rows. 1st. How many miles did the riding boy travel in plowing out one such a field of corn twice?—2d. If the horses travelled 3 miles an hour, 11 hours a day, how many days' riding was there?—Generally, a span of horses was used by each plowman and rider, first one horse awhile, and then it rested while the other horse took a turn. This boy had no span mate to change with *him*. The plowing began very early, to get some rows ready in advance for the hoers, and those days were "awful long."

How Large is Alaska?

Last month we took a look at Italy, and at the size of Mexico. How many of our younger readers, or older ones even, have any definite conception of our piece of land tucked away up in the north-west corner of the continent, named Alaska, which the United States purchased of Russia in 1867, paying for it seven million two hundred thousand dollars ($7,200,000). Look on the map, and you will see that it extends north and south about 700 miles, between latitudes 60° and 70°; and that its main part lies between about 141° and 168° of west longitude, covering 26 degrees. But the lines of longitude keep coming nearer together, all the way from the equator to the North Pole when they run out, so that in the middle of of Alaska a degree of longitude is only abont 25 miles, and the distance across its middle, east and west, is only about 700 miles. It is somewhat square, with a long narrow peninsula, like a tail piece, running off south-west 300 or 400 miles to a point.

Alaska borders on three seas, the Pacific and Aretic Oceans and Behring Sea, and the coast line measures about 4,000 miles. The River Yerkon (which the Russians called the Kwiekpak) rises in British Columbia, is over 1,800 miles long, is over a mile broad 600 miles up, and is navigable by light-draught steamers nearly 1,400 miles from its month. The Kuskoquim River has been explored 600 miles from its mouth. There are other quite large rivers. The highest mountain in North America, we think, is Mount Elias, in Alaska.

We have known little about Alaska until just now. At the recent census-taking, men were sent up there to find out more concerning it. Their maps and figures are not yet printed, but we learn that, with the Islands belonging to it, Alaska covers about 565,868 square miles, or 362,151,680 *acres*. So we paid Russia a very trifle less than *two cents an acre*. Whether this was cheap or not is yet to be learned, but probably it was, as there are good fisheries, minerals, fine timber, etc.

How can we think of the real size? Let us see. Well, Alaska is ten times as large as the great State of Illinois. Or it is 8¼ times as large as all the six New England States. Or it is two-thirds as large as all the United States east of the Mississippi River. Or it is as large as all of our country east of the Mississippi, north of the southern line of Virginia and Tennessee. Or Alaska is as large as all New England, New York, Pennsylvania, Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, Iowa, and one-third of Nebraska thrown in.

About the population of Alaska we can not say much. The census men estimate that there are, in all the territory, about 392 white men, 1,683 Creoles, or those having part Russian and part savage blood; and 30,614 savages —making the total population 32,689. If divided equally between them there would be over 17 square miles, or about 110,800 acres for each one of the population, young and old. There is no territorial government yet established, but Congress now in session is talking about organizing one.

Our Puzzle Box.

THE SHIPWRECK PUZZLE.

A ship was caught in a storm, her rigging was swept away, she sprang a leak, and began to sink. The captain ordered the boats lowered, but such was the force of the storm that only one boat was seaworthy. The crew consisted of thirty men, fifteen white men and fifteen negroes. The boat would only hold fifteen men, the rest must perish. The captain drew them up in line, and told them he would begin at the head and count; when he reached the foot, he would begin at the head of the line again. Every tenth man was to be thrown overboard. The crew agreed. How did the captain arrange them so that every tenth one was a negro?

Take backgammon men or black and white buttons, and arrange them in a row to find the answer. We think it will take longer than you imagine. This was told to me by an old sailor. I think it has never been in print.

D. A. K.

ANAGRAMS.

1. Their woes.
2. A slide purse.
3. Is Ahe clever?
4. Magic dot.
5. No mere ices.
6. One is a brig.
7. Actors' pet.
8. A fat chin Dr.
9. Gusty one.
10. Crab holes.

SQUARE WORD.

A singing bird. A beautiful flower
A tropical plant. Part of a ship. ISOLA

PATCHWORK.

(Explained on page 27, January Number.)

1. To interweave, to form of platted twigs.
2. Deck on which cables are stowed in ships.
3. Beginning, source.
4. To provide, to buy provisions.
5. To form with ridges, like quills.
6. Weak and slender.

METAGRAM.

Fill the blanks with words made from a word of six letters.

(EXAMPLE.—Fill the following blanks from the word *daisy*:

Ellen —— it was — —— —— for her when she had to —— "no." Said, a, sad, day, say.)

As I walked through the —— I saw a wild —— and a piece of ——; I took the latter to a —— to have it —— in a ring —— my father. It —— him to wear it, and he frequently takes it off to —— himself; he says perhaps his finger will be smaller when the —— comes. He is stationed at the ——.

CROSS-WORD.

My first is in anguish, but not in woe,
My next is in feather, but not in how,
My third is in shilling, but not in dime,
My fourth is in murder, but not in crime,
My fifth is in parsnip, but not in beet,
My sixth is in ankle, but not in feet,
My seventh is in venison, but not in ham,
My whole is no counterfeit, fiction or sham.

Answers to Puzzles in the April Number.

NUMERICAL ENIGMA.—Do little helpful things, and speak helpful words whenever you can.

CROSS WORD.—Godliness.

RIDDLE.—The letter S.

ANAGRAMS.—1. Intercession. 2. Imperial. 3. Tolerate. 4. Remedial. 5. Rebounding. 6. Detrimental. 7. Sentimental. 8. Desperate. 9. Peppermint. 10. Resources.

DIAMOND.—

T
M I T
C A M E L
T I M B R E L
C O R A L
E E L
L

LETTER ENIGMA.—The letter S.

ZIG ZAG.—Flower Honeysuckle. 1. Hog. 2. Dog. 3. Pen. 4. Hen. 5. Yew. 6. Ass. 7. Gun. 8. Ice. 9. Kid. 10. Old. 11. Die.

DECAPITATIONS.—1. Glass — lass. 2. Maid — aid. 3. Fowl—owl.

Answers to the "School Children Problems" in May *American Agriculturist*:

No. 1: 11,596 miles, and 1,556 feet over.

No. 2: Three times across the continent, and 1,096 miles over; or nearly 3⅛ times across.

No. 3: $14,541,753,55.

No. 4: $398,750,189.45.

No. 5: 79,750 farms, and $189.45 over; or 79,750 farms, and 3⅛ acres more, with a plot 8 feet square besides.

No. 6: 1,530,710 years, and 157½ school days over.

Long Days.—How to Shorten Them.

To most Boys and Girls the days seem a great deal longer than they do to most grown-up people, and they generally seem longer to boys than to girls—not always. Young people have lively imaginations, and bright hopes and anticipations of something in the future, and they are anxious for time to fly swifter than it does. But our "note of passing time" depends a great deal upon what we are doing, how much we want to do before noon, or night, and especially how much we have to *think about*. Older people, full of business or work that they are anxious to finish, and with much to occupy their minds, feel that time flies too fast. Boys engaged in fishing, or some interesting sport, do not find the days long; but when following the harrow, or at other steady work, they do find the days very long—yes, very long. So do the girls, when rocking the cradle for hours, or in other steady occupation. The girls, however, generally have more variety, have their dolls, their patchwork, etc., and think less about the hours and minutes.—The writer of this, when a boy, had a great deal of harrowing to do, and oh how long were the days of going round and round and round those fields that seemed very large then. But when the Sunday School Library came in, and he could get plenty of books, and also read those drawn by his brothers and sisters each week, he used to carry one of these with him in a cloth wrapping to keep it clean, and whenever the team stopped to rest, catch a few paragraphs of history or description. This gave something fresh to think of every hour, and it shortened the days wonderfully. What was read then was so much thought over that it has been well remembered and very useful ever since.—Our recipe for shortening the days is, to get plenty to think of all the time—by reading good books, not fictitious stories, but histories, descriptions of common things, etc.—We try in these columns to give our young readers something to think about. Let us see what we can learn

About Common Salt.

All of you know how it looks and how it tastes. If you use even a small magnifying glass, or microscope, you will see that it is made up of very beautiful little crystals of regular form, though in ground table salt these are broken into very irregular pieces. In unground "Rock Salt," you see these crystals in large size.—But

WHAT IS SALT MADE OF?

If we put salt in a cup and pour on it a little sulphuric acid (oil of vitriol), a yellowish gas will rise up, a very little of which will set you to coughing if breathed with the air, and to breathe much of it would be fatal. This gas is called CHLORINE. It it about 2½ times as heavy as air. It destroys most colors, and is therefore used for bleaching colored articles white.—By another more difficult process, the chemists will get out of salt a very interesting *metal*, which is called SODIUM.—It looks so much like pure Silver, that you can hardly see any difference. It is pretty hard when cooled down to zero, but at ordinary temperatures it is as soft as beeswax. It is very light, so light that it will even float on water. Its specific gravity is .935 to .972, averaging, say .95, that is, a cup of water weighing 10 ounces, would weigh only 9½ ounces if filled with the metal Sodium.

A WONDERFUL CHANGE.

Now, if we put together 23 ounces of this pure metal *Sodium* and 35½ ounces of that very noxious gas *Chlorine*, they will unite perfectly, and both be entirely changed In fact, there will be 58½ ounces of pure *salt*, just such as we use on the table. Usually, in crystalizing, salt catches and holds little particles of water, and when heated, this water expands and bursts the crystals with a snapping sound, like the bursting of so many little steam boilers. There is

A GREAT DEAL OF SALT IN THE WORLD.

On the average, every gallon of ocean water contains about 4 ounces of salt. Drying out the water leaves the salt. It has been estimated that if all the salt in the ocean was separated, it would form a mass of 3,000,000 cubic miles, or a great block of salt 100 miles wide, 1,000 miles long, and 30 miles high. It would cover all the great States of New York and Pennsylvania, and most of New Jersey, with a solid block of salt 30 miles high. Or it would cover the whole of the United States and Territories (except Alaska,) with a solid block of salt one mile thick!

TO GET SALT,

they dry out the water by the sun's heat or fire heat, and the salt is left.—Many salt springs exist, and a vast supply of salt water is found by digging wells down to it, as at Syracuse, N. Y., where from six to ten million bushels of salt are produced every year, and from 30 to 50 gallons of the salt water are required for each bushel.—But having told you what salt is, and about salt water, we must tell you about mines of solid salt in another number, including our visit to the Cracow Mines in Poland, which you have often heard of, no doubt.

Some Very Fine Lines: Nobert's "Plate" or "Lines."

One of my young friends, "M. M.," has been reading about the Microscope, and has found a referenee to "Nobert's Plate," or "Nobert's Lines," and would like to know what they are. I think that these lines of Nobert are among the most wonderful productions of human skill, and in the hope that they may interest other youngsters, I will try and explain them. Formerly, in testing the magnifying power of a microscope, certain minute natural objects were used. There are some creatures found in fresh water, the shells, or what answers to shells, the solid parts of which have lines and markings which only mieroscopes of the highest power would show. Within a few years, Mr. Nobert has come with his "lines," and has shown that he can make lines, or rulings, upon glass, so close together that the most powerful microscope ean not "resolve them," as the microseopists say, that is, allow them to be seen distinctly and be counted. The glass is ruled by a fine diamond point, moved by maehinery, in lines side by side. We find a great deal is written on the "Wonders of the Microscope," but I do not know of anything more wonderful than the fact, that glass has been ruled witb lines so fine, so elose together, that the most powerful microscope has not been able to show them, that is has not been able to show the lines distinct. Nobert's "plate," as it is called, is ruled in bands of lines, the lines in eaeh band being nearer together than the previous ones. There are, I think, nineteen such bands in all, some of which no microscope has yet been able to make out; but it is hoped that as improvements are made in microscopes they will be seen some day. Some wonderfully fine writing has been done upon glass. A good illustration of this delicate work is that by Mr. Webb, of England, who has written the Lord's Prayer on glass, in letters so small that more than eight Bibles could be written, in the same hand, in the space of a square inch! It almost makes one's head dizzy to think of it, so mueh being put in so small a space!

THE DOCTOR.

THE FISHERMAN'S DAUGHTER PLAYING IN THE WATER.

The Fisherman's Daughter

Nettie was the daughter of a fisherman, who every morning started out in his boat, and Nettie would sit upon a rock and watch until the white sail was a mere speck in the distance, and soon could be seen no more. She knew that late in the afternoon she would see the white speck again, that it would come nearer and nearer, when she could wave her handkerchief, a signal which her father would answer, and shortly he would come to the shore with his boat-load of fish. But between the starting out in the morning and the return towards night was a very long day to Nettie. She was an only child, and as there were no other houses very near, she had no children playmates. Her mother was busy all day, and Nettie was left to amuse herself. She was very fond of the water; there was a little stream not far from the house, which in some places noisily rushed over the stones, and in others made deep still pools, and finally went on its way to the sea. It was the child's great delight to follow up this stream, and she could always find amusement upon its banks. At times she would pick the Buttercups and other wild flowers, and throw them into a rapid part of the stream, and see them chase one another down. Again she would bring a bit of bread in her pocket and throw the crumbs into some of the deep places. It was great fun to see the little fishes snap at these crumbs, and catch them before they had fairly struck the water. If Nettie was without any other children as playmates, she was not alone; the big Newfoundland dog "Rover" always went with her; were it not for this, her mother would certainly not have trusted her so long away. "Rover" and Nettie were great friends, and he never let her go out of his sight. One afternoon, as the fisherman eame towards the shore, there was no little girl with a signal of welcome; this surprised the father, who hastened to make a landing, and rushed to the house. Nettie was not there; father and mother were now both alarmed, and started for the banks of the stream. After a few calls there was a bark from "Rover"; Nettie was upon the grass, weak and faint, and the faithful Rover was near her and licking her face. The little girl, in feeding her favorite fishes, had fallen into a pool where the water was deep, and the dog had plunged in and eaught and saved her. These Newfoundland dogs are famous for their intelligence and for their ability to swim, and the instances in which they have saved the lives, not only of children, but of grown persons, are very numerous. It is not necessary to say that Nettie thought all the more of her strong and watchful playmate and guardian, and of course "Rover," if he could think, felt an increased interest in the child, which he had rescued from the water.

ASKED FOR BREAD AND GIVEN A STONE.

Many of the self-raising flours and bread preparations sold for baking purposes, are not made it appears from cream tartar at all. The composition and process of manufacture taken from the records of the Patent Office at Washington, of a well-known manufacturer, is of the most loathsome character. This is the formula:

500 POUNDS BURNED AND GROUND BONES are placed in
400 POUNDS SULPHURIC ACID (Oil of Vitriol), freshly diluted with
1,000 POUNDS WATER, and stirred from time to time for three days. The paste is mixed with farinaceous material, or with freshly burned gypsum, or with stearine, and dried and pulverized. * * * * This pulverized acid is to be used with bicarbonate of soda in baking powders.

Bones of defunct animals gathered from, in and about the great cities, on battle fields, and wherever else they may be found in quantities. These bones are reduced to a powder with sulphuric acid, and this powder is the cheap substitute used in self-raising flours and yeast powders in lieu of the wholesome and more expensive cream tartar.

The following article is copied from one of the leading daily papers of St. Louis, headed, *A Yeast Powder Investigation:*

"A complaint, signed by a large number of citizens, has been filed in the office of the Health Commissioner, alleging that the yeast factory * * * on the corner of State and Mallett Streets, Carondelet, was a nuisance, and asking that it be investigated. It is claimed in the complaint that the establishment used large quantities of bones in its yeast preparations, and that the bones are frequently brought there with putrid flesh sticking to them, causing unpleasant odors in the locality. A sanitary officer visited the factory, and reports that while he discovered no flesh on the bones, he discovered a large quantity of bones and obtained a new and interesting insight into the manufacture of yeast powders entirely unknown to him. He states the process consists in grinding the bones into a powder, and then mixing acids with the powder, producing a compound highly dangerous to health. The matter will be investigated by the Board of Health."

No article of daily food appears to be so brazenly and persistently adulterated as that of yeast powders, and the so-called self-raising flours appear in the same category of fraud. We know pure baking powder can be had, for at the time Dr. Mott, the government chemist, exposed the adulteration of baking powders and flour in the *Scientific American*, the Doctor made special mention of having analyzed the Royal Baking Powder and found it composed of pure and wholesome material. This powder, says the Doctor, "I use in my own kitchen."

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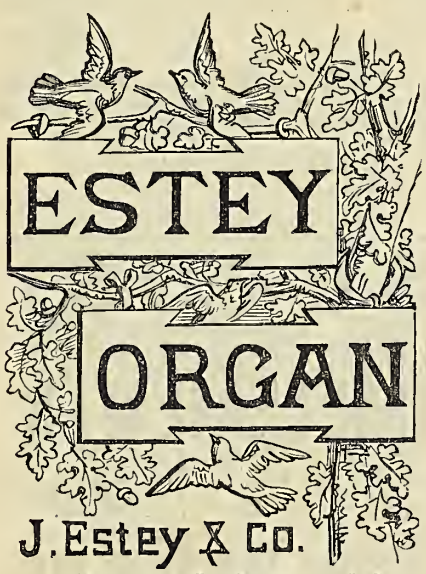

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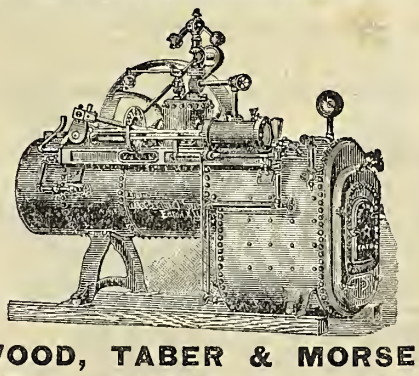

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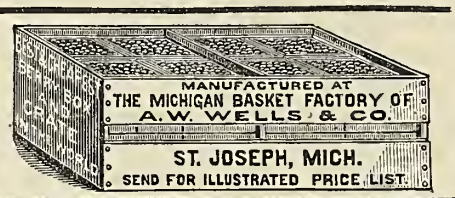

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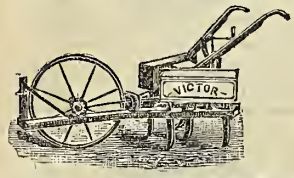

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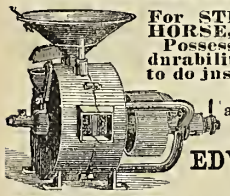

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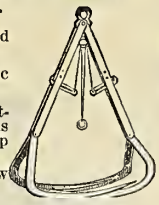

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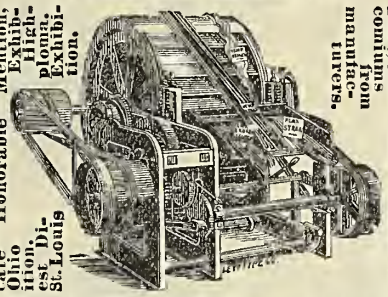

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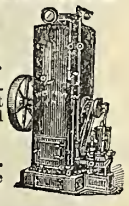

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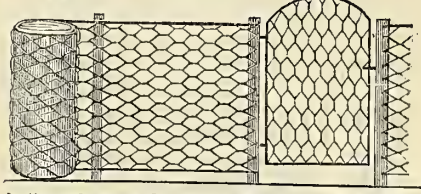

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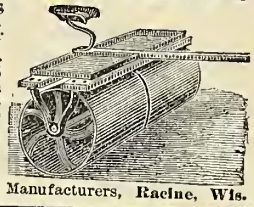

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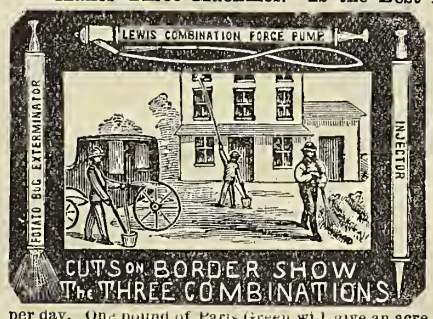
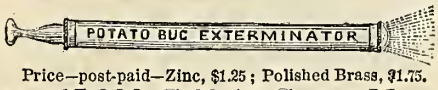
Makes Three Machines. Is the Best Pump in the World. Made of Brass Throughout.



ANOTHER NEW IMPROVEMENT IS
LEWIS'S PATENT SPRAY ATTACHMENT,
can change from solid stream to spray instantly.

DON'T FAIL TO READ THIS SPLENDID OFFER.

We will send a sample Pump, express paid, to any express station in the U. S. or Canadas for $5.50. Regular retail price, $6.00. Weight, 4½ lbs. Length, 32 inches.
We also manufacture, separate, the



Price—post-paid—Zinc, $1.25; Polished Brass, $1.75.

Over 15,000 Sold in Seven Months.

We challenge the world for its equal. Can do from 3 to 5 acres per day. One pound of Paris Green will give an acre three separate dressings. For *syringing fruit trees* infected with insects of any kind, it stands unrivalled. Send for Illustrated Catalogue, Price List, and Terms to Agents, etc. We give the names and addresses of many of our agents who make from $10 to $30 in a single day; also a long list of our customers, each of whom have bought from $50 to $2,000 worth of these goods in from 1 to 3 weeks' time. You can make from $10 to $20 per day. Agents wanted everywhere.

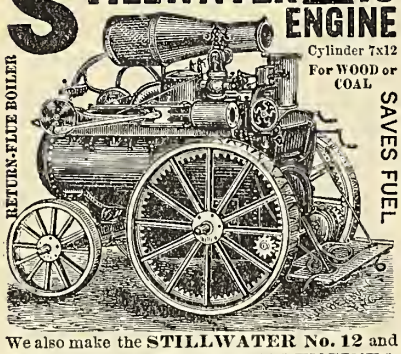
LEWIS MANUFACTURING WORKS, Catskill, N. Y.

MINNESOTA CHIEF

Wonderfully simple and perfect in its threshing and separating qualities. Saves **ALL** the Grain and **cleans it ready for Market.** Runs easily, constructed durably, finished beautifully, least expensive, and most economical and SATISFACTORY MACHINE NOW **BEST** MADE. It will handle wet grain as well as dry. It has no **THRESHER** equal in threshing flax and timothy; cleans **IN USE** both as well as wheat; requires no change except the sieve. Has more square feet of separating and cleaning surface than any other machine; can not be overloaded. It is both over and under blast. Our **CLOVER HULLING ATTACHMENT** (new and very desirable.) **SEPARATORS** of the various sizes fitted for Steam or Horse-Power. The **ELWARD,** the **PITTS** and the **WOODBURY Horse-Powers,** as made by us, are unexcelled.

STILLWATER No. 10 ENGINE

Cylinder 7x12
For WOOD or COAL



We also make the **STILLWATER No. 12** and **MINNESOTA GIANT FARM ENGINES,** each having return-flue, and fitted for burning straw, wood or coal. These Engines are made and finished in the *most perfect manner.* **TRACTION ATTACHMENTS** can be furnished with any of them. ☞ *For Price-List and Circulars,* address

SEYMOUR, SABIN & CO.
Manufacturers, Stillwater, Minn.

SPRING STEEL TOOTH

HORSE RAKES.

THE CHAMPIONS OF THE WORLD.
Highest Award The Medal of Honor,
at the
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No Cogs or Ratchets, Easiest Hand or Horse Dumping. Purchasers prefer them to all others for Durability and Efficiency. Fully guaranteed; so no risk is incurred in ordering from us. Responsible Agents wanted where we have none.

Send Stamp for Catalogues of RAKES, THRESHING MACHINES, &c.
WHEELER & MELICK CO.,
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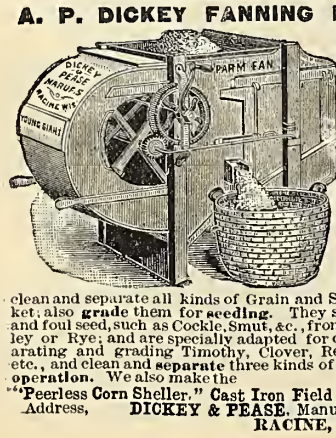
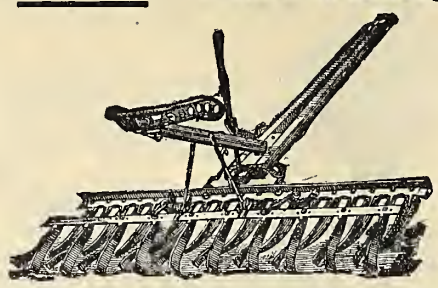
THE CELEBRATED
A. P. DICKEY FANNING MILLS!



Have no equal. They obtained the highest award at the Centennial in 1876, and at Paris in 1878. These mills are made in nine sizes, for Farm and Warehouse use (hand or power). Capacity from 50 to 500 bushels per hour. They clean and separate all kinds of Grain and Seed for market; also **grade them for seeding.** They separate Oats and foul seed, such as Cockle, Smut, &c., from Wheat, Barley or Rye; and are specially adapted for cleaning, separating and grading Timothy, Clover, Red-Top, Flax, etc., and clean and **separate** three kinds of Beans at **one operation.** We also make the

"Peerless Corn Sheller," Cast Iron Field Rollers, &c.
Address, **DICKEY & PEASE,** Manufacturers,
RACINE, Wisconsin.

"ACME" Pulverizing



HARROW, CLOD CRUSHER AND LEVELER.

The **"ACME"** subjects the soil to the action of a **Crusher and Leveler,** and at the same time to the **Cutting, Lifting, Turning** process of double rows of **Steel Coulters,** the peculiar shape and arrangement of which gives **immense cutting power.** The **entire absence of Spikes or Spring Teeth** avoids pulling up and scattering of rubbish. It is **especially adapted** to inverted sod, hard clay and "slough land," where other Harrows utterly fail, and also works perfectly on light soil. Sent on trial to responsible farmers anywhere in the United States. Agents wanted. Send for circular.

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Received Medal AND HIGHEST AWARD

OF MERIT AT CENTENNIAL.

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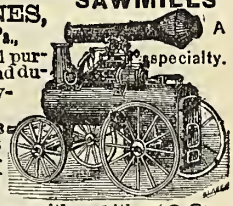
STEAM ENGINES,
A. B. FARQUHAR, York, Pa.,
Cheapest and best for all purposes—simple, strong, and durable. Also Horse Powers and Gin Gear.

A specialty.



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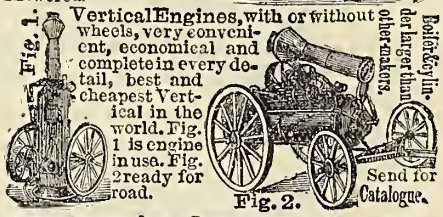

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Boilers for Engines larger than other makers.

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The Farquhar Separator
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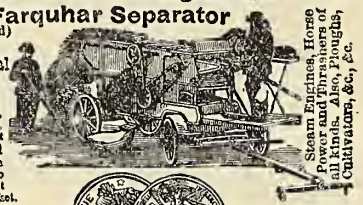

Penna. Agricultural Works, York, Pa. Lightest draft, most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.

Steam Engines, Horse Power and Threshers of all kinds, also Plows, Cultivators, &c., &c.

AND HIGHEST PRIZE AWARDED SEPARATORS,

THE SILVER MEDAL AT Paris Exposition.

Send for Illustrated Catalogue. *Address A. B. Farquhar, York, Pa.*

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STANDARD MACHINERY FOR ALL PURPOSES.
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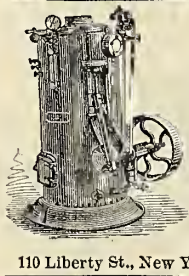

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Especially adapted for Dairies, Creameries, and Farm purposes. Can be used for years without any repairs. Over 2,200 in actual use. Not one ever exploded. Can be run by any one of ordinary intelligence. Every Engine complete, ready to use as soon as received. No Engine built so good and so low in price.

3	Horse-Power....	$240.00
4½	" "	280.00
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COMMON SENSE ENGINES.

Simple, durable, of the best workmanship and material. Solid Wrought Iron Boilers. Engine complete on board cars at Springfield, Ohio, at following prices:

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5	" "	300
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15, 20 and 25 H. P. at very low prices.

These Engines fully guaranteed in every respect. Address COMMON SENSE ENGINE Co., Springfield, Ohio.

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STANDARD WIND MILL,

VICTORIOUS AT
Phila., 1876—Paris, 1878
25 Years in Use.
GUARANTEED SUPERIOR
To any other Windmill Made.
17 Sizes—1 Man to 45 Horse Power.
Adopted by the leading R. R. Co.'s and by the U. S. Government at Forts and Garrisons.
$3,500,000 worth now in Use.
Send for Catalogue **"A."**
U. S. Wind Engine & Pump Co.,
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THE
Watertown WINDMILL

THE BEST IN USE. Write for descriptive catalogue **A**
H. H. BABCOCK & SONS,
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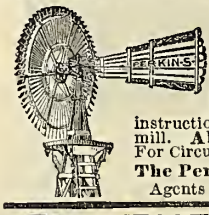

THE PERKINS' Wind Mill

is the Strongest and Best Self-Regulating Wind Mill made. Full instructions for erecting sent with the first mill. **All Wind Mills warranted.** For Circulars and Prices address
The Perkins' Wind Mill & Ax Co.,
Agents wanted. **Mishawaka, Ind.**

THE CHAMPION
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The Best in the World.

It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.
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OLD RELIABLE STOVER.

We manufacture the Old Reliable Stover Wind Mill, for pumping and grinding purposes. Also O. E. Winger's novel and improved double feed grinders, operated by pumping Wind Mills, and by any other power. Also geared Wind Mills for running Machinery. Write for catalogue and agencies.
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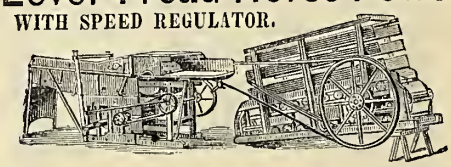
HEEBNER'S
Level Tread Horse Power
WITH SPEED REGULATOR.



Heebner's Improved Little Giant Threshing Machine,
"Union" Feed Cutter, Circular and Drag Saw Machine, etc., Send for Catalogue. **Heebner & Sons,**
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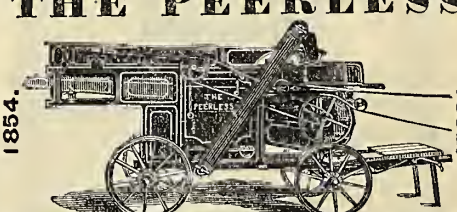
THE PEERLESS



Thresher and Cleaner—Clover Huller and Cleaner—Straw-Preserving Rye Threshers—Railway and Lever Powers—The Howland Feed Mill—The Aspinwall Potato Planter, and Digger. Our machines are guaranteed to work well, and have received the highest testimonials and cannot be excelled.
B. GILL & SON,
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Hege's Improved Circular Saw Mills.

Send for CIRCULARS.

With universal Log Beam, Rectilinear, simultaneous Set works, and Double Eccentric Friction Feed.

Unexcelled for Accuracy & Durability. Prices low. Workmanship first-class.

Manufactured by **Salem Iron Works, Salem, N. C.**

THE BUCKEYE JUNIOR LAWN MOWER
MANUFACTURED BY MAST FOOS AND CO. SPRINGFIELD, O.

EASY TO WORK,
Simple in Construction,
Beautiful in Appearance,
Noiseless in Operation,
Strong and Durable.

Send to MAST, FOOS & CO., FOR CIRCULARS AND PRICES.

AHEAD OF ALL COMPETITION.
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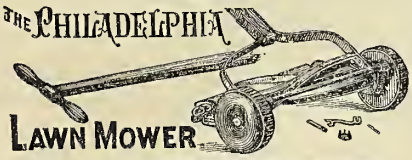
THE PHILADELPHIA LAWN MOWER



TWELVE SIZES FOR HAND USE.
Weighing from 21 to 51 lbs.
THREE SIZES FOR HORSE POWER.
GRAHAM, EMLEN & PASSMORE,
Patentees and Manufacturers,
631 Market St., Philadelphia, Pa.
We are general agents, and sell the above at manufacturer's prices, at Rochester, N. Y., or Chicago, Ill. Send for Catalogue and prices.
HIRAM SIBLEY & CO.,
Chicago, Ill. Rochester, N. Y.

Gardner's Railway Pitching Apparatus.

Consisting of Grappling Fork, Carrier, Pulleys, etc. This Fork, Car, etc., has been sold throughout the U. S. and Canada with the greatest success. It has won its way amid the greatest competition of Forks and Carriers, and is without doubt the best Hay and Grain Unloader made. Every farmer should send for a circular now. E. V. R. GARDNER & Co., Westtown, Orange Co., N. Y.

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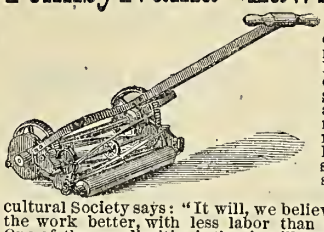
Pennsylvania Lawn Mower.



Surpassing all others and pronounced the best, lightest, runs more easily, cuts longer grass, is more durable, requires less repair, cuts grass more smoothly, is less liable to obstruction, is of handsome appearance.

Penn. State Agricultural Society says: "It will, we believe, wear longer, do the work better, with less labor than any other Mower. One of the peculiarities is that it will cut higher grass than any other Mower." The Quaker City 10-inch Mower for small Lawns and Plots is unequalled.

Send for handsomely Illustrated Catalogue. Every machine warranted. Address,
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CHURCH'S
Hay Elevator & Carrier.
BEST in use for Mowing Away Hay in barns or stacking, being adapted for either purpose. Has no equal for Simplicity, Durability and good work. The track is self adjusting and is easily put up. Send for descriptive circular and special terms for introduction to E. L. CHURCH, Manufacturer, Harvard, McHenry County, Illinois.

THRESHER FOR $175.00.
We offer a first-class thresher and cleaner, 4 to 6 horse-power; that will *Separate* and *Clean Thoroughly*, ready for market, leaving the straw in good condition; with a capacity of 30 to 50 bushels wheat, and a proportionate amount of other grain per hour; for the *unprecedentedly low* sum of $175.00 cash. Send for circular.
BLYMYER MANUFACTURING CO.,
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DOUBLE HARPOON
HORSE HAY-FORK.
Best in the World.
Descriptive Catalogue sent Free.
PENNOCK MANUFACTURING CO.,
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LAWN MOWERS.
HAND MOWERS, Side Wheel and Roller, 10 to 20 Inch Cut.
HORSE MOWERS, 25 to 40 Inch Cut.
Our Mowers are guaranteed to be the best in the Market. Send for Circular and Price List,
CHADBORN & COLDWELL M'F'G CO.,
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ROBERT C. REEVES,
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DEALER IN AGRICULTURAL IMPLEMENTS, SEEDS and FERTILIZERS.
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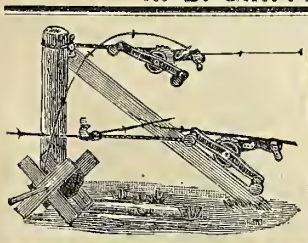

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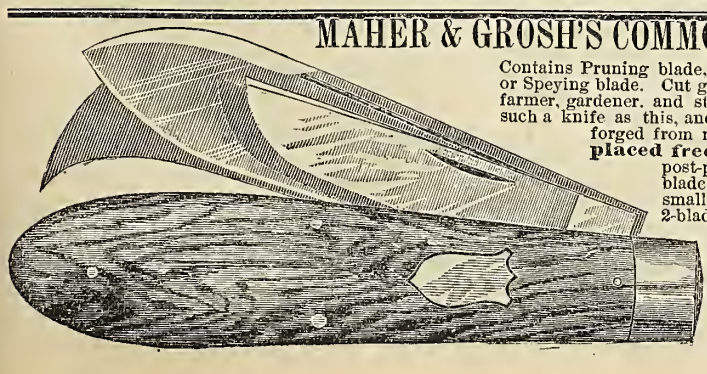
FARMERS LOOK TO YOUR INTERESTS.
The "Samson" is the best, the simplest and most portable Wire Stretcher in the market. It does the work every time. Every machine guaranteed. Ask your hardware dealer for it. Send for circulars. Manufactured only by
SAMSON NOVELTY WORKS, DEKALB, Illinois.

MAHER & GROSH'S COMMON-SENSE KNIFE



Contains Pruning blade, Jackknife blade, and Budding or Speying blade. Cut gives exact size. Probably every farmer, gardener, and stock-man has often thought of such a knife as this, and here it is. Blades carefully forged from razor steel, file-tested, and replaced free if soft or flawy. Price $1.00, post-paid; or without the budding blade, 75 cents; with just large and small blades, 50 cents; extra strong 2-blade, for hard service, 75 cents; "Our Best" oil-tempered Pruner, $1.00; Budding knife, 65 cents; Pruning Shears, $1.00. Illustrated List free; also our "How to Use a Razor"
MAHER & GROSH,
Cutlers, TOLEDO, OHIO.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

Preserve the Census Items.—The census of 1880 covered a far greater range of subjects than was ever before attempted in this country, and unusual care was taken to insure the greatest possible accuracy. It will require years of work yet to compile and arrange the statistics and get them into a complete condition to present to the public, and they will then be too bulky to be accessible to the people at large. Members of Congress have direct access to the census bureau, and for the various discussions of the tariff and other topics they bring in many illustrations from the unpublished statistics. Having these discussions in full, we are able to prepare interesting and useful tables for the *American Agriculturist*, in a condensed and intelligible form. One or more of these is given in each paper, and our readers will do well to carefully preserve all the numbers of this volume, and back to December. For example, in *December* is given the range and changes in prices of leading articles for four years. In *January* the notes on Wood as Fuel. In *February*, the entire population figures for States, Territories, etc.; and a live stock market summary for 1881. In *March*, the Areas of land and water in each State and Territory, and Kansas Agricultural Statistics. In *April*, some school statistics, and the world's population. In *May*, the oat crop, acreage, yield, etc., for the whole country and each State and Territory; the population of 100 cities; some statistics of Italy and Mexico, and of U. S. school children, etc. Other condensed statements will be found in this and future numbers.

It is well to always run one's eye over the advertising pages of this Journal, and see what is offered, by whom, etc., as a source of information. There are usually *new* and valuable implements, and other things worthy of attention, while no vile or quack medical nostrums are present to disgust the old, or deceive or allure the young. No man is admitted if there is not good reason for believing that he has both the *ability* and *intention* to do what his advertisement promises. The Editors have full veto power over every advertisement offered, and they exclude the advertisements of every party whom they would not themselves patronize, if wanting the articles offered. ☞When corresponding with any of these advertisers, sending for their circulars, catalogues, etc., it is well to inform them that you are a reader of this Journal. They will know what *you* expect (and what *we* expect) of them in the way of prompt and fair treatment.

Red Flannel.—"F. S." asks whether scarlet medicated under-clothing is beneficial as a remedy for rheumatism. We do not suppose the color of flannel can have any possible effect. That it can be "medicated" with anything that will not be removed at the first washing is extremely doubtful. Flannel that has been dyed is usually closer in texture than the white, and if there is any difference it is probably due to this.

The American Association of Nurserymen, Florists, and Seedsmen, will hold its annual meeting this year, June 21st to 24th, at Rochester, N. Y. This is the most easterly point at which this meeting has been held, and as Rochester is an important horticultural center, there will no doubt be a large attendance. The papers read at former meetings have been of value, and the discussions of a practical character and full of interest. Mr. W. C. Barry is the President.

The Recent Forestry Meeting.

The first step in all great reforms is to convince the public of the existence of the evil to be remedied. For many years those interested in the preservation of our forests, and in forest-tree planting, have been engaged in showing the present rapid destruction of our timber, and in demonstrating that, at the present rate of decrease, we shall be practically treeless at no very distant time. Most effective in showing this, have been the maps issued by the Forestry Department of the Census. A glance at these is more impressive than a volume of description. That the people are in part aroused to the importance of the tree question, is shown by the offering by some of the Western States, of bounties for tree planting, in the abatement of taxes for a given area planted in trees; also in the appointment of "Arbor-Day" as a State holiday, in which the people can have a frolic in planting trees by the road-side and elsewhere. The recent meeting of the Forestry Association, which began at Cincinnati on April 25th, has a special importance, from the fact that, by bringing together men from a large number of States, it indicates united action. Especial interest was given to the meeting by the prominent part taken by the Governor of Ohio, and other State and Municipal officers. There were representatives, including governors and professors in colleges, and others, from Alabama, Kentucky, Iowa, Wisconsin, Michigan, Arkansas, Nebraska, and elsewhere. Especially noticeable was the large attendance from Canada, which seems ready to take a timely warning by our neglect of our forests, and act for the preservation of their own while there is yet time. A number of interesting papers were read, and discussions followed. A paper of special interest was sent by the venerable ex-Governor Horatio Seymour, who, in his retirement from political life, devotes himself to agricultural pursuits.

An interesting part of the proceedings was the planting at 8th Street Park, hereafter to be called Garfield Place, of twelve memorial trees, in honor of the late President. The trees were sent from Mentor by Mrs. Garfield, and the planting was done by young ladies. A permanent organization was perfected, to be known as the "American Forestry Congress." Its most important act was the appointment of a committee to present to Congress the claims of forestry upon national legislation, and to procure the enactment of needed laws.

The Death of Charles Darwin.—These words record the loss, at the ripe age of 74, of the greatest naturalist of the age, and one whose labors have been largely for the benefit of farmers and horticulturists. His views have been much discussed by those who knew the least about them, and this pure-minded, reverent naturalist has been most abused by those who have never read his books. As to the conclusions to which he came in following the way in which facts led him, we have nothing to say, and that is a matter of minor importance. As to his facts, these have never been disputed. The great service Darwin has rendered the world, has been in teaching people *how* to see. His methods of investigation, so simple and so thorough, have been of the greatest benefit in every department of scientific research. Whatever may have been his influence upon the thought of his time, he has benefited the workers and investigators of his day to an extent beyond that of any other. That which brings him nearer to our class of readers than anything else, is his work on "Plants and Animals Under Domestication,"—and what a wonderful store-house of facts and references it is! No breeder of animals, and no intelligent grower of plants, can be regarded as thoroughly equipped for his pursuit unless he has this work at hand for reference. Every young gardener should read his work on the "Movements of Climbing Plants," if only to see how the commonest things relating to plants, when properly observed, may become of the greatest interest and value. No horticulturist can afford to be without the information contained in his work on "Cross and Self-fertilization in the Vegetable Kingdom," if he would intelligently work at the production of new varieties. This great observer of facts was most modest in his statement of the conclusions to which he thought these facts pointed, and no man was more free from self-assertion. The writer, in correspondence with him, soon after the appearance of "Animals and Plants Under Domestication," said, with reference to the newly announced view of "Pangenesis," "I have read it, and it almost took away my breath." In his reply, he said: "You say that it almost took away your breath? Well, I do not wonder at it. Still, I am convinced that, perhaps in a modified form, this view, or something like it, will come to be accepted"; showing an absence of egotism characteristic of the man. Darwin did not need Westminster Abbey, but Westminster needed Darwin, and he was buried there by the side of Newton. That wonderful repository of England's precious dust, has an added attraction to every naturalist who visits Europe.

For JUNE.

SPECIAL PREMIUMS.

(*N. B.—The following offers will hold good* ONLY *from the reception of this paper, up to July 3d, next*):

Any person sending a subscription to the *American Agriculturist* for one year, at the regular rate ($1.50), will be presented with **any one** of the following, delivered by mail, post-paid, to any part of the United States or Territories (the Pot-grown Plants excepted):

No. 1.—Any one of the One Hundred Good Books described on pages 124 and 125 of the March number of the *American Agriculturist.*

OR,

No. 2.—The American Popular Dictionary, described on page 124 of March *American Agriculturist.*

OR,

No. 3.—24 Bidwell Strawberry Plants, post-paid; OR, 15 Pot-grown Bidwell Strawberry Plants, by express, unpaid, as described in March *American Agriculturist*, **page 124.**

OR.

No. 4. — The "American Agriculturist MICROSCOPE," described on page 173 of April *American Agriculturist.*

The Grain and Produce Speculation.

Contrary to the general expectation, the manipulators of the Breadstuff and Provision Markets are still able to hold up prices, by the sheer force of abundant capital in the hands of a few individuals who work in combination. It now looks as if they may be able to continue to do so for a month or two more, until, their ends being accomplished, they can unload their stocks, partly upon entrapped "bears," and more upon unsuspecting and deluded "lambs." If any unlooked for disaster happens to the maturing crops, the "deals" can perhaps be carried through the season.

While the speculative prices prevent exports, to the detriment of the country at large, and of farmers themselves in the future, as explained in a former number, there is of course a positive demand for food and seed that must be met at any price which those controling the supplies may choose to demand. The rates thus maintained are to the temporary advantage of those producers who have still on hand an uncontracted surplus from last year's crops. But the mass of producers have reaped little advantage, as the manipulators took good care to get in hand, or under contract, a very large part of the crop of 1881, before beginning operations on an extensive scale. On the other hand, the great mass of consumers throughout the entire country are suffering, because of the abnormal high rates, a large percentage of which goes into the pockets of the speculators.

The harvest has commenced at the far South, and is moving northward, with no unfavorable features so far. The present out-look is favorable generally, a few localities excepted, though the cold weather is continuing so late that fears of the results are indulged on the part of some. There is this encouragement to farmers, that if the crops give only an average yield, or less, higher prices will bring the total receipts from the diminished products nearly, if not quite, up to or beyond what would be obtained from a crop largely in excess of the average yield, as that would reduce prices.

THE END.

Important Notice.

The offers of the General Premiums for Volume 41 will *terminate* on June 30.

All who have premium lists in progress, will need to complete them and call for the premiums before that date, or they cannot be supplied.

We advise every reader to take advantage of this opportunity to obtain one or more of these articles.

A Thousand New Lists

can **easily** be made up before the end of June—lists of two, three, four, five, and many more, names of subscribers, old and new—and any corresponding premium article be obtained without price In past years many clubs of 50 to 150 names have been started and made up in May and June.

SPECIAL.

Two half-yearly subscriptions (July to December, inclusive) may be counted for one whole year, in making up a premium list. Indeed we will be pleased to have such subscriptions, being assured that every one who reads this Journal as it will be during the next six months, will be certain to continue a permanent reader.

Full Descriptive Lists with Illustrations will be forwarded post-paid to any one who has not a copy at hand, on application by postal card or otherwise.

For Far-Off Subscribers, those too distant to receive this number before June 10, we will try and provide premiums, if they send forward their lists within 20 days after this June number comes to hand.

"Consumption."—Important Discoveries.—It is estimated that one-seventh of all the deaths of the human race are due to tubercular disease, and that one-third of all who die in middle age are carried off from this cause! We never admit advertisements of medicines for "consumption," because we consider all such nostrums valueless, when not injurious. Skilful medical treatment may modify suffering, and sometimes delay the fatality of the disease for years. Consumption has long been classed as one of the human maladies rarely curable, though some expert physicians have recently been successful in this direction, to a limited extent, when the disease has been taken in hand during its earlier stages. But medical investigations are now carried on with greater energy than ever before, and medical science is advancing with wonderful rapidity, as compared with any past period of the world's history. Recent discoveries make it possible to arrest splenic fever, which has been so destructive of cattle and other domestic animals, by inoculation, similar in its action to that of vaccination for small-pox.—And now we have the most interesting and important announcement that Dr. Koch, of Berlin, after a long series of patient investigations and experiments, has discovered the cause of consumption, and the way the disease is disseminated. Prof. Tyndall reports upon this discovery in the "London Times," and is convinced of its reliability. Without going into details, we will explain briefly that it is thought to be proved that tubercles in the lungs of consumptives are due to an animated, minute rod-shaped parasite, that multiplies with great rapidity, and that may be transferred from one person to another by inoculation, and by inhalation. By impregnating these parasites with a special dye, Dr. Koch has been able to detect them, to watch their operations, to transfer them to many animals, to breed them—five successive generations in fifty-four days—and to perform a large number of most remarkable experiments. This discovery promises to be one of the most important of the age, and of far-reaching consequences. If the cause of consumption and its mode of transfer be discovered, its cure, by timely inoculation with cultivated or modified virus, or by other means, will probably quickly follow. The further developments in this direction will be watched with intense interest by the entire medical profession—indeed by the whole human race. And well may it be so, if we can now indulge a hope of successfully combatting a disease that is annually sending to the grave more victims than war and pestilence, and more than any other human ailment; a disease that, as stated above is the direct cause of one-seventh of all human deaths—the slayer of one-third of all who die in middle life.

The Sugar of the Maple Where Stored.—"A. J. P." asks: "What part of the tree does the sap, or sugar water come from—the roots or the branches?" In general terms, material for the future growth of the tree is provided during the previous summer, and is stored in the form of starch, or some closely related substance. In spring, when it is necessary to carry this nutriment to the buds, where new growth will take place, the starch is changed into sugar. Starch is not soluble in cold water, and is usually the form in which material for future growth is stored. It is readily converted into sugar, which is very soluble, when it is to be conveyed where it is needed in the growth of the plant, and there converted into the material of which the new stems, leaves, etc., are built up. Sugar does not exist, as such, in the roots and branches of the tree, but in the sap; and when this is intercepted by cutting some of the carrying tubes, it flows out, and the sugar is obtained by boiling—that is, driving off the water by heat.

Sugar from Sorghum.—The "National Academy of Sciences" is our most important scientific association, and is, in a sense, an official one, as it bears certain relations to the Government. In view of the increasing importance of Sorghum as a source of sugar, the Academy last year appointed a committee to investigate the matter. Professor Silliman, the chairman, in a letter to Dr. T. G. Richardson, of Louisiana, states that the committee have examined the published, and especially the unpublished, investigations of Dr. Collier, Chemist to the Department of Agriculture, and that he is so far convinced of the importance of Sorghum as a source of sugar, as to advise planting it in those southern localities where the recent floods have destroyed the fields of Sugar Cane. His advice is founded upon results obtained from "Early Amber Cane," while the "Early Orange" seems to be still more promising. One of the most interesting points of this letter is the statement, on the authority of Col. H. B. Richards, of LaGrange, Texas, that the "Orange" cane becomes perennial in Texas, the shoots from last year's stubble having been, on April 8th, far ahead of any cane from seed. Should the Sorghum become really perennial in Texas, Louisiana, etc., it may revolutionize sugar culture in the cane-growing States. The great difficulty in growing Sorgbum in the Northern States, is the small size and weakness of the young plants, as they are at first difficult to distinguish from grass. Late sowing, so that the plant will grow rapidly from the start, is for this reason better than too early sowing. The introduction of the "Early Amber" has revived the interest in Sorghum culture; it has, on undoubted authority, yielded from 1,000 to 2,000 lbs. of fair sugar to the acre, with 20 to 25 gallons of syrup, besides an important product of seed. This seems to be the earliest variety, and in a climate similar to that of Washington, matures in 90 days. Can farmers produce their own sugar? is a question that will be asked. As we have formerly suggested, sugar can only be produced by the use of more expensive apparatus than a single farmer would care to purchase, and it requires skilled labor. The proper way, as in the case of cheese factories and creameries, is for farmers to unite, put up and equip a sugar-making establishment. The farmer can readily make a superior syrup from the "Early Amber," vastly better than any ever made from the older sorts of Sorghum. For this he will need a mill and an evaporator. These are made by several establishments which advertise them, and will send circulars that can be compared. One manufactory will answer for several neighbors, and co-operation will be economical.

A Remarkable Bear.—The number of odd things that are sent to a New York commission dealer in the course of a year, would make up a curious catalogue. We often find, besides those animals ordinarily regarded as "game," living Alligators, Horned Owls, Opossums, etc., and lately there was the carcass of a fine Brown or Cinnamon Bear hanging at a store. Upon inquiry, we learned that the bear was sent from the mountains of western Pennsylvania. As this bear, formerly considered as a distinct species, but now regarded as only a variety of the common Black Bear, is not known east of the Rocky Mountains, we thought that there must be some mistake about it, and that possibly it had been a tame specimen. Upon further inquiry of the sender, Seeley Bovier, of Bradford Co., Pa., he replied in substance, that the animal was killed by him on the "South Mountain Range," in Lycoming Co. Mr. B., who is an old hunter and trapper, had never seen such an animal before. He states that all last summer the people of that sparsely settled district had been alarmed at a strange animal, which followed men, women and children who were out after dark, and would sometimes come very near them, making a frightful noise. From the occasional glimpses had of the animal, it was decided that it was a panther. Mr. B. is convinced that this bear, which he shot on April 12, was the mysterious animal. He writes that he was the most ferocious of all the bears he ever killed. Feeling sure that the occurrence of a Cinnamon Bear in this locality must be of interest to naturalists, we wrote to Prof. Baird, Secretary of the Smithsonian Institution, the above statement. He at once telegraphed to purchase the animal and forward it to Washington. Prof. B. afterwards wrote that the specimen was a remarkably fine one, and was a welcome addition to their collection, which, full as it is in our native animals, had not before included the rare Cinnamon Bear.

Covering Land with "Greenbacks."—Those living on the "boundless prairies," where the government gives a farm to every man or woman who will take it, live on it and work it, and where any amount of land can be bought for a very few shillings or dollars per acre, will open their eyes pretty wide on seeing the price paid the other day for a plot of ground in New York City, on the corner of Fifth Avenue and 54th Street. It is four "city lots" 25 by 100 feet, or just 100 feet square, making 10,000 square feet, which is less than a quarter of an acre—(an acre is 43,560 square feet). Mr. W. H. Vanderbilt bought the plot to build a couple of houses on it for two married daughters, and the cash paid for this quarter acre was $396,000, or at the rate of over a million and a half dollars per acre ($1,584,000 per acre).—The ordinary greenback bills, somewhat closely trimmed, are $7\frac{1}{2}$ inches long, and $3^1/_{15}$ inches wide, having 22 square inches of surface; six and a half bills lack but an inch of covering or "carpeting" a square foot. A little figuring will show that the price paid for Mr. V.'s plot would just about cover it all over with one-dollar bills, laid *six deep*, or cover it with $5 bills, and spread $1 bills all over these!

"No Shoe, No Horse," runs the old saw, but I say "nay—that is not true."—Not a nail has been driven in any hoof in my stable since February, 1881. I had four young horses, one in contant use, two others used frequently single and double, in all weathers and in all conditions of the roads. Two old horses were about two months in getting good feet under them on account of their shelly hoofs—made so by nails. Their feet finally became hard, and just as tough as the colts'. They were used all the time, did all the farm work and "teaming," until I sold one and loaned the other. With more horses than I needed, no *one* was worked very much. The feet of the old horses were worn a good deal, but not enough to need shoeing; the colts had to have their feet rasped off and shaped now and then. If I had had much more work for them, no doubt "toe-clips" would have been needed—and if we had had a very icy time I would have had a set of steel shoes of the "Good-enough" pattern tacked on one horse "all around." We took great comfort in driving; the horses certainly stood up better than if shod and the calks had worn a little smooth. They did not "ball up," in soft snow, in the least. They did not throw snow balls back into the sleigh. They travelled without wincing over the roughest frozen roads, and I have not known of a slip or a stumble all winter. So much for the experiment of which I wrote last summer.—Mason C. Weld.

Traps for the June Bugs.—"A. F. N.," Beaver Dam, Wis. There is probably no better trap than that given in Nov. last, page 489, which is a French invention with Yankee improvements. This throws a powerful light in all directions and attracts insects from a distance. A cheap trap is to cut a barrel in halves to make two deep tubs, and place a few inches of water in the bottom of each, and set a lamp of some kind in the center. It will be well to fix some kind of a shield at a little distance above the top of the lamp chimney to prevent the bugs from falling into it and thus interfering with the flame.

Keeping Pop-Corn.—"H. T. W." Always keep the corn on the cob, and in a cool place. If shelled, it loses its moisture sooner, and after a while will not pop well, as there is not water enough to make the steam which bursts it open. If kept on the car in a hot, dry room, it will, in a week or two, be very unsatisfactory. The crib where other corn is kept is a good place for pop-corn, or it may be put in any room where there is no fire.

Those Bad Sparrows.—There was much satisfaction, for a few years, with the result of introducing the English Sparrows into New York City, and soon after into other cities and into many villages. They destroyed the caterpillars or "measure worms," which were annually doing great injury to our shade trees. But the sparrows have multiplied so rapidly that they have become a serious nuisance, and effective measures are already necessary to reduce their numbers. Once in possession of any place they drive off nearly all the native songsters, while they themselves afford no sweet music, and they are, moreover, homely birds at best. And worse still, they destroy many seeds, and grains, and attack most kinds of fruits and garden vegetables. —In the mild climate of Australia they have so multiplied that a Government Commission was appointed to look into the matter. The report of this Commission recommends active and prompt measures for the destruction of the Sparrows, before they have another season's multiplication, such as rewards for their eggs and heads, poisoned water in summer, and sulphur fumes under their roosts at night, plaster of Paris mixed with oat meal, etc. The report says, "the sparrows are increasing at an astonishing and alarming rate, under despairing conditions to the cultivator, that he can not control; the seed is taken out of the ground, the fruit buds off the trees, the sprouting vegetable as fast as it grows, and the fruit ere it is ripe."...."They attack apricots, cherries, figs, apples, grapes, peaches, plums, pears, nectarines, loquats, olives, wheat and barley, peas, cabbages, cauliflowers, and garden seed ..."

More About "Graham Gems."—Mrs. "H.," Caldwell, N. J., writes that to make perfect gems, the essentials are: Cast-iron gem pans, good flour, and a *very* hot oven—one that would burn anything else. She directs: 1 egg, well beaten: 1 cup cold water; 1 cup sweet milk; a little salt. Stir into these enough Graham flour to make it too thick to pour, but just drop from the spoon. Place the gem pans on the top of the stove until they are heated, drop in the mixture, and bake from 20 to 30 minutes in the hot oven.

Pruning Knives.—We have recently tried a pruning-knife made here, which shows that we need not depend upon England for such implements. It requires long usage to properly judge of the material, but appearances are in its favor; strength is evident, and so is good shape. One important point has evidently been considered, the handle fills and fits the hand; no matter how good a pruning-knife may be, unless the handle is a handful, it will be tiresome to work with. This knife, which also has a budding-blade, and another for general use, is made by Maher & Grosh, Toledo, Ohio, whose knives and cutlery of other kinds have already acquired reputation elsewhere.

Preserved Eggs.—Several have asked about a method of preserving eggs other than the usual one with milk of lime. Upon inquiry among the large dealers, we find that eggs preserved in any other manner than with lime are not known in the market. Those who offer Flowers of Sulphur colored with lamp-black under the fraudulent name of "Ozone," claim that eggs can be preserved very cheaply by its use. We can only say that whatever this sulphur under the name of "Ozone" will do, may be done by sulphur under its proper name. —That it will preserve eggs, we have no proof.

"Living in the Basement and Sleeping in the Attic."—As a specimen of how many people —a great multitude of them in the aggregate—sacrifice comfort and health to a false notion of maintaining "respectability," we quote the remark of a friend made just now: "They eat and live most of the time in a dark, damp basement, or in a back room, where the cheerful, health-giving sun-light has little entrance, and sleep in small attic, sun-heated rooms, poorly ventilated, that they may keep the best part of the house in 'Parlor' and 'Spare room' to be occupied by others only a few times during the whole year."

Feeding Whole Corn to Horses.—There is much talk about a cheap grist-mill, that will grind corn and other grain, and save farmers from paying toll to the miller. An admirable pattern for such a mill, which has come down to us from the ancients, is to be found in every horse's mouth, if he is not too old. The jaw-teeth seem to have been made on purpose for this kind of work, and if we listen to the noise of the grinding, as the horse puts his nose into the pile of shelled corn, or does the shelling himself from the cob, he seems to have great satisfaction in doing his own milling. But the ground corn is finer, is quicker eaten, and digests better, you say. Is that proved? Fast eating is a vice in a human being. Is it any better in a horse? If the horse does his own grinding, he must eat slower, the food is more thoroughly mixed with saliva, and probably digests better. The practice of feeding whole corn is more common in the prairie regions than in the East, where grist-mills are plenty. Possibly the feeding of whole grain not only saves the toll, but goes farther pound for pound. We need some experiments to test the comparative value of feeding grain whole or ground. It seem a pity to have so good a grist-mill, as stands in the stable, lie idle.

Goats as Milk Producers.—We often have an inquiry as to where goats may be procured. We now have a letter from a friend in Thorntown, Ind., who asks this question, and also requests that we give an article on the goat as a milk producer. The goat in southern Europe is used not only to produce milk, but as a vehicle to convey it to the consumer—the flock being driven from house to house, and each customer supplied from the "original fount."—In this country the keeping of goats is mainly confined to our Irish citizens. In large cities, like New York, many have squatted upon unoccupied lands, such as belong to estates in litigation or are waiting for the heirs to become of age. They have numerous shanties, some quite large and comfortable, and each family keeps one or more—usually more, goats. The neighbors of these settlements know a great deal about goats, and are obliged to provide self-closing gates to their premises, and to be always on the guard against invasion, as these animals will eat everything they can get a chance at, even the sheets and other articles hung out to dry. The goat uncontrolled can be a thorough nuisance. Many years ago the late Horace Greeley, having been advised to supply one of his children with goat's milk, purchased an animal. He gave his experience with it in a most amusing letter to the *American Agriculturist*, and concluded the statement of his troubles with: "It has harked everything on the place except the crow-bar."—Still, under proper care, the goat may be made a very useful animal. In European towns they are tethered, and if accustomed to this from the first, may be kept from doing mischief. A goat will live upon food that a cow will reject—in the cities when at large they subsist mainly upon show-bills which are pasted upon fences and dead walls. The goat begins to breed when six to nine months old, and goes with kid for four months. In Europe, the custom is to allow the first kid to suckle and take all the milk, with the idea that this tends to increase the size of the udder, and insure a greater flow in the future. A good goat will give a quart of milk at each meal, three times a day, it being the custom to milk thus often, the udder being so small that this is regarded as necessary. After three months the milk falls off to about two-thirds in quantity, and this yield continues until within three weeks of the time of coming in again. A larger supply of milk is given by tethered goats than by those allowed to run at large. The milk is regarded as richer, but more easy of digestion than cow's milk. It has a peculiar flavor, to which one soon becomes accustomed, and this is less manifest in animals kept singly, than in those that are herded together in flocks. But little is known about the breeds, or particular strains of these animals, but there is a general impression that the nearer the color approaches to black, the better milker the animal is likely to be. In Europe the kids are allowed to suckle for a week or two, and the males are killed for food. There is a general prejudice against the meat of the goat, but the writer has lived where this was the only readily obtainable fresh meat, and has on more than one occasion served a leg of a well fattened goat to those who assumed that it was mutton, and were not undeceived. A young kid is quite as good as "spring lamb," and most acceptable. The boys in the shanty settlements above referred to, early train the male kids to harness, and sell them at a good price. We answer many questions by saying that we know of no place where goats are on sale, but have no doubt that an advertisement in a city paper would bring abundant responses.

Keeping Eggs—Also as to Onions.—Mrs. "S. J. L.," Stamford, Ill., writes us, that she packs eggs in oats: putting in the bottom of a barrel a layer of oats, three inches deep; on this a layer of eggs, small end down, and so on alternating eggs and oats until the barrel is full. If fresh when put down, she keeps eggs packed thus through the hottest weather.—To the inquirers about sowing onions broadcast, Mrs. L. repeats "Punch's" advice to young people about to marry—"Dout." One of her neighbors who tried it "is now a sadder, and a wiser man."

Imported Potatoes.—With our own potatoes at $3 per barrel, and the abundant crop last year in Great Britain, it has been found profitable to import potatoes. We have seen some of these "furriners" as they were taken from the ship; the bags so rotten that they could scarcely hold together, and rather small, and badly shapen potatoes, black with adhering soil, and with sprouts two inches or more long. There has been some talk in the daily papers about the superior quality of a Scotch variety, "The Champion," which has caused several to inquire about it. We can only reply that, a few years ago, when potatoes in Great Britain rotted badly, "The Champion" was generally healthy, and in purchasing seed potatoes to distribute in Ireland, the British Government very properly bought only this variety. But as to planting "The Champion," or any other European variety, in this country, it would be a great mistake. *No* European variety of potato is worth cultivation with us, as has been shown by repeated trials. A few years ago we planted some 30 of the choicest English varieties, alongside of "Early Rose" and other American kinds, in the same soil, and with the same treatment. While we had full and satisfactory crops from our own varieties, the English was so light of very small potatoes, that we had very little more than we had planted, and those fit only for the pigs. This has been the result whenever the trial has been made.

The Abutilons.—As plants for window culture, the Abutilons have many admirable qualities. Their foliage is pleasing, and they are almost always in bloom. The old *Abutilon striatum*, often called "Flowering Maple," from the resemblance of its leaves to those of the Maple, is well known, but there are now many others with much handsomer flowers, as may be seen by reference to the catalogues. The now rather old *Boule de Neige* (Snow Ball), is one of the very best. Small plants only six inches high will bloom, and they will grow six feet and produce flowers in abundance.

The Fuel Question, to the settler upon a prairie farm is—for the first few years, at least, an important one. The accounts of the use of corn for fuel, strike the farmer in the older States as something like a "wanton waste." It is however, merely a question of dollars and cents, about which there should be no sentiment. If a farmer in a prairie locality can get more out of an acre of corn by feeding it to pigs than he can by selling it by the bushel, every one will say, "feed it by all means." So, again, if by burning the corn from an acre, he can get more effective work in running his steam engine, or in his kitchen, in cooking food, than he could from the fuel bought with the proceeds from the sale of that acre of corn, why should be not burn his corn? In feeding corn to the farm animals, a large share of it is actually burned, and there is really no more wrong in the rapid burning under the boiler than there is in the slow burning in the bodies of his working-oxen. It is no more wrong for the farmer to keep himself and his family warm by burning corn in the stove, and thus supply external heat, than it is to burn the same corn in his own body and those of his family in the form of Johnny Cake, to keep up the internal heat. The burning is essentially the same, though differing in rapidity. We hold it to be the duty of every prairie farmer—and every other—to do what seems best under his circumstances. If the best use he can make of a bushel of corn or 100 pounds of hay is to burn it, let it be burned. This fuel question is one to which we ask the attention of our western readers. Some one has been writing up the common Sunflower as a plant to grow for fuel. In a note in March (p. 127) we expressed our doubts as to the value of this plant, and now, before he could have seen the article referred to, we have an interesting letter from "J. A. O.," Goodhue Co., Minn., who says that he has tried the Sunflower as a fuel plant and regards it, so far as his experience goes, as a failure. He gave the plants fair cultivation, but they rarely grew over seven feet high, or more than an inch through. He says that unless they can be stored where rain or snow cannot reach them, they are utterly unfit for fuel, and in their best condition he regards them as a greatly inferior fuel to hay—meaning, of course, the wild growth of the prairies. In view of the importance of this matter, we ask our readers upon prairie farms to give us, for the benefit of others, their experience with fuel. Is there an *annual plant* that may be grown for fuel more profitably than Indian Corn? In March we advised growing the Ailanthus, and suggested Peach trees for fuel. Both of these require two years' growth before they become profitable. Who will suggest something better?

Terrible Losses of War.—An Italian Journal, the "*Secolo*," of Milan, gives a summary of only twelve of the wars that have occurred in Europe during the present century, in which it reckons losses amounting to 11,611,000 men, and the expense to $30,754,400,000. This is equivalent to killing nearly every full grown man now in the United States; and the cost equals nearly Six Hundred and Seventy-six Million Dollars more than the value of all the lands, buildings, and personal property of our entire country reported in the census of 1870, which was $30,068,518,507.

About Insecticides and Fertilizers.—We never use, or advise others to use, any medicine, unless we know its exact composition, and on principle exclude a very large amount of advertising of this kind, (which would be very profitable, including advertisements of medicines for animals,) unless we know what the alleged remedies contain. Carrying this principle still further, we do not advise the use of, and do not advertise, fertilizers, unless we know from the makers their exact composition; and the same rule holds good with compounds for killing insects. In short, we will not be accessory to the use, on man, beast, plant, or soil, of any substance or compound whatever, unless convinced that it may be probably useful and positively not injurious. When circulars of "garden dust," claimed to supply "all the necessary elements of plant food, and at the same time furnish a sure protection against the ravages of insects, worms, etc.," we ask for the formula, and if this is not forthcoming, we decline the advertisement. "Lawn Sand" is a most remarkable sand, which, spread upon the lawn, will not only kill the weeds, but promote the growth of the grass! This very knowing kind of sand has not, so far as we are aware, crossed the Atlantic, but we are surprised to see English journals, the conductors of which know better, permit such trash to be set before their readers in their advertising pages.

Silk Worms and Mulberries.—We are glad to note a renewed interest in silk culture; and trust that it may not run into an excitement. We gave in March (page 107) the views of those who have given most attention to the subject, and with which we heartily agree. Until silk culture becomes a home industry and carried on by those members of the family whose services can not be otherwise profitably employed, it will not be a success. Inquiries continue to come for eggs. The first step in silk culture is to secure a supply of food for the worms. This must be some kind of White Mulberry or the leaves of Osage Orange. In many States there are hedges of Osage Orange which can supply food. Prof. Riley, who has experimented with this food, says, if, when the worms get large, they are not fed the tender succulent leaves, but only the firmer ones, there will be no appreciable difference in the silk from this food as compared with that from Mulberry. Those who have no hedges of Osage Orange must turn their attention to establishing a plantation of some kind of White Mulberry. There is scarcely anything to add to what was said in March. In all the older States there are trees, mostly relics of the "Multicaulis mania," from which cuttings may be procured. We have before referred to the "Women's Silk Cultural Association" of Philadelphia, which we understand is free from any speculative motives, but is to act as a medium between the widely scattered silk raisers and the buyers, their chief object being to advise and instruct. The Corresponding Secretary writes that in the first year of their operations they sent trees to 20 States and eggs into 25 States, and that they received cocoons from 21 States. We can not do better by our inquirers than to refer them to this Association.

Great Waste of Good Food.

Meats and almost all other foods are 25 to 50 per cent. above average prices. There is one source of valuable nutriment that is largely overlooked. On the average the skimmed milk that has supplied cream for five pounds of butter contains fully four pounds of casein, which is the chief constituent of cheese. Skim milk cheese is almost pure casein. This casein is very similar to lean beef in its composition, and when eaten serves the same purpose as lean beef in nourishing and strengthening the muscles and other parts of the body. In some dairy establishments the skimmed milk is used for making cheese which is sold at a somewhat lower price than the whole milk cheese. Such cheese is one of the best sources of nutriment for the great mass of people engaged in hard labor. But taking the country together, in butter dairies and in families making butter, the skimmed milk is mainly fed to swine if not thrown away. It is too valuable for this. We invite special attention to what Mr. Willard says of Cottage Cheese on another page of this number. A little study of the subject and a little practice, will enable any butter maker to obtain for each five pounds of butter, four pounds of a most nutritious article of food, one that is easily digested and which is very palatable when properly prepared. Mr. Willard gives general directions. A great point is to avoid letting the soured milk become bitter by long standing, or by remaining in wood or metal vessels that will affect its flavor; or by exposing it to foul air or odors.

Any butter maker can soon secure a regular paying market for Cottage or curd Cheese, by offering a few samples of good quality in neighboring villages or cities. It will be a boon to multitudes of families to have such an article brought to their notice, and afterwards regularly supplied to them. It is safe to say that the actual addition to the food supplies of the country may be increased by millions of dollars every year, if we get into the way of using the casein of skimmed milk that is now treated as of comparatively small account.

A Pound of Money.—Of United States Gold Dollars (25.8 grains) about 271 1/3 weigh one pound avoirdupois. Of Silver Coins, the new Silver Dollar ("Buzzards")—412 1/2 grains—17 weigh almost exactly one pound. Of the "Trade Dollars"—420 grains—about 16 3/5 weigh one pound. The "halves," "quarters," and "dimes," are proportionately lighter, and require $18.14\frac{1}{2}$ of them to make a pound avoirdupois.—Of "Nickels," the 5-cent pieces weigh 77.16 grains, or about 90 to the pound. The "nickel" 3-cent pieces weigh 3.0 grains, or 233 to the pound. The small copper cents weigh 48 grains, or about 146 to the pound, or about 9 to the ounce.

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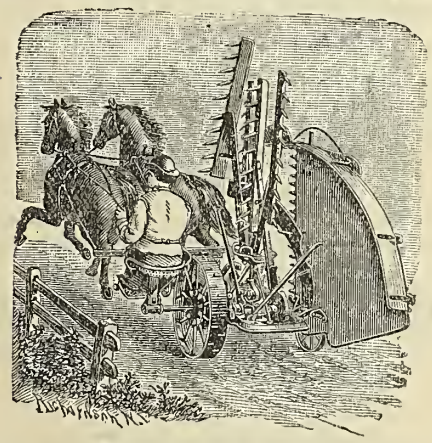

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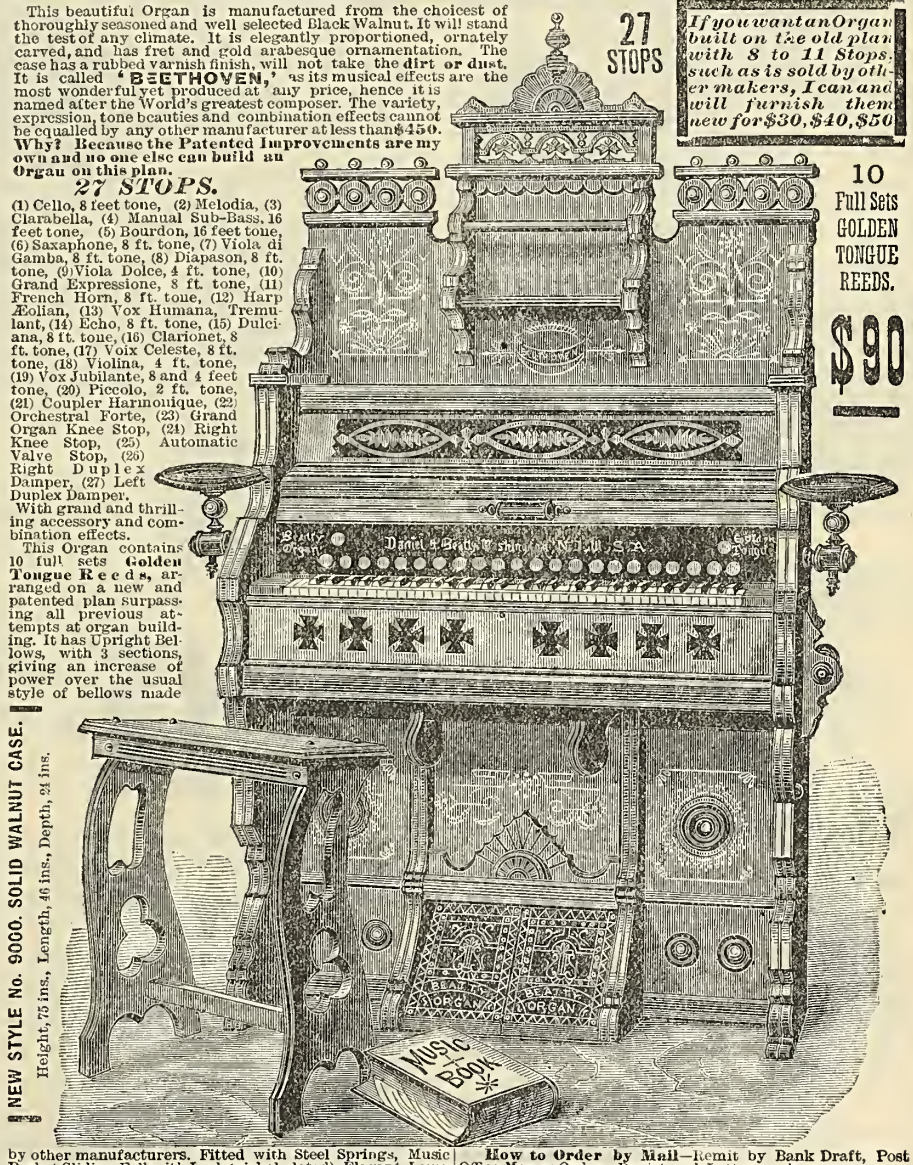

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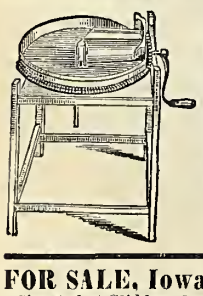

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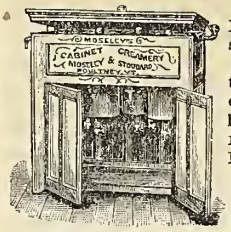

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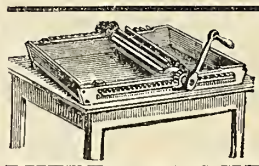

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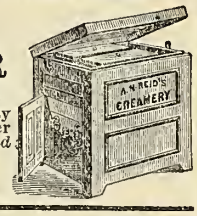

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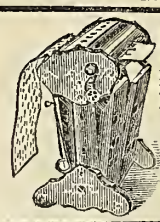

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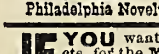

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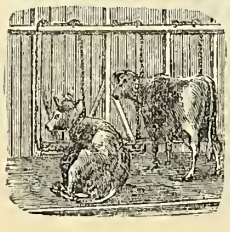

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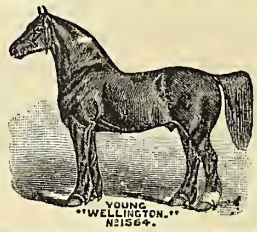

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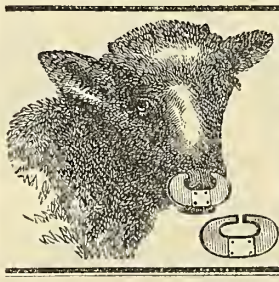

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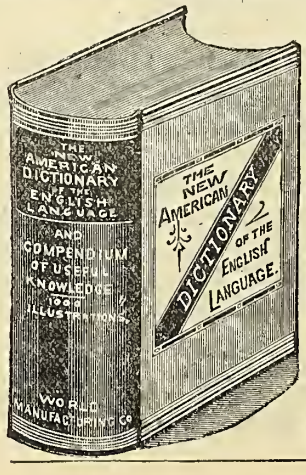

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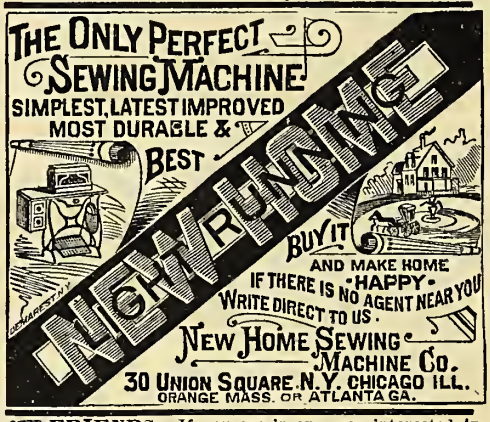

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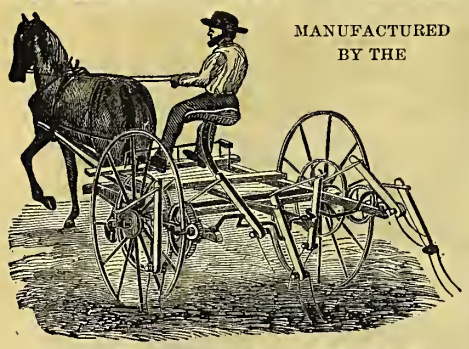

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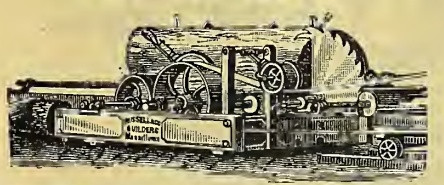

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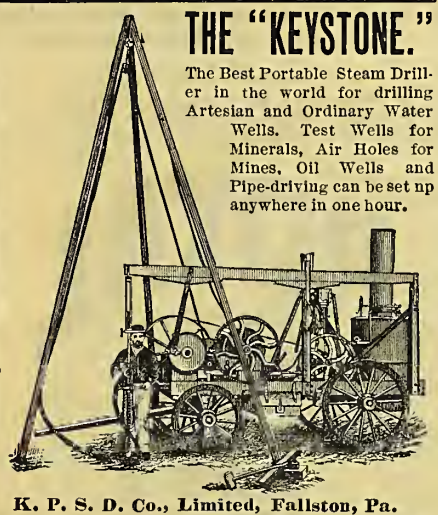

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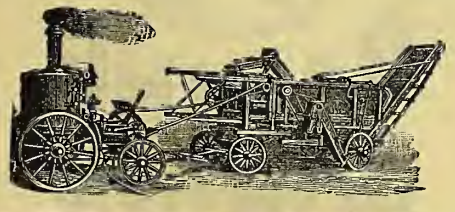

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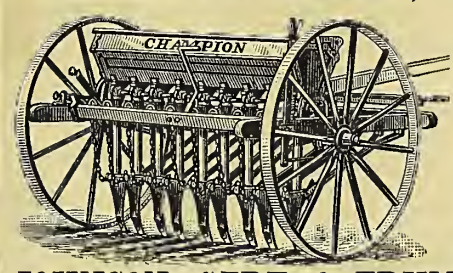

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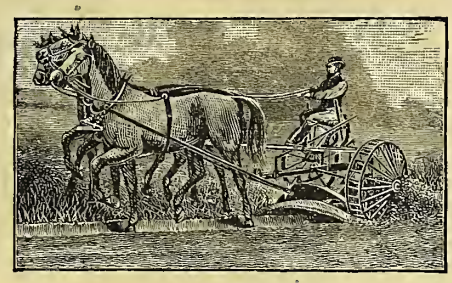

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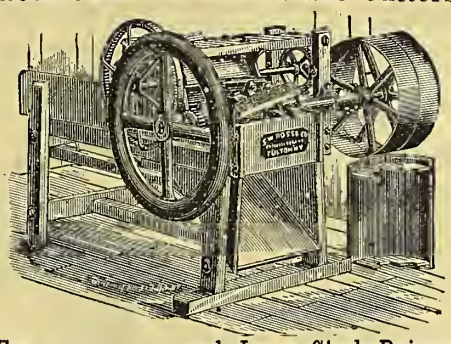

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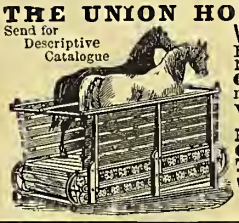

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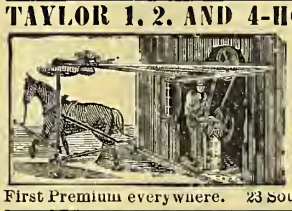

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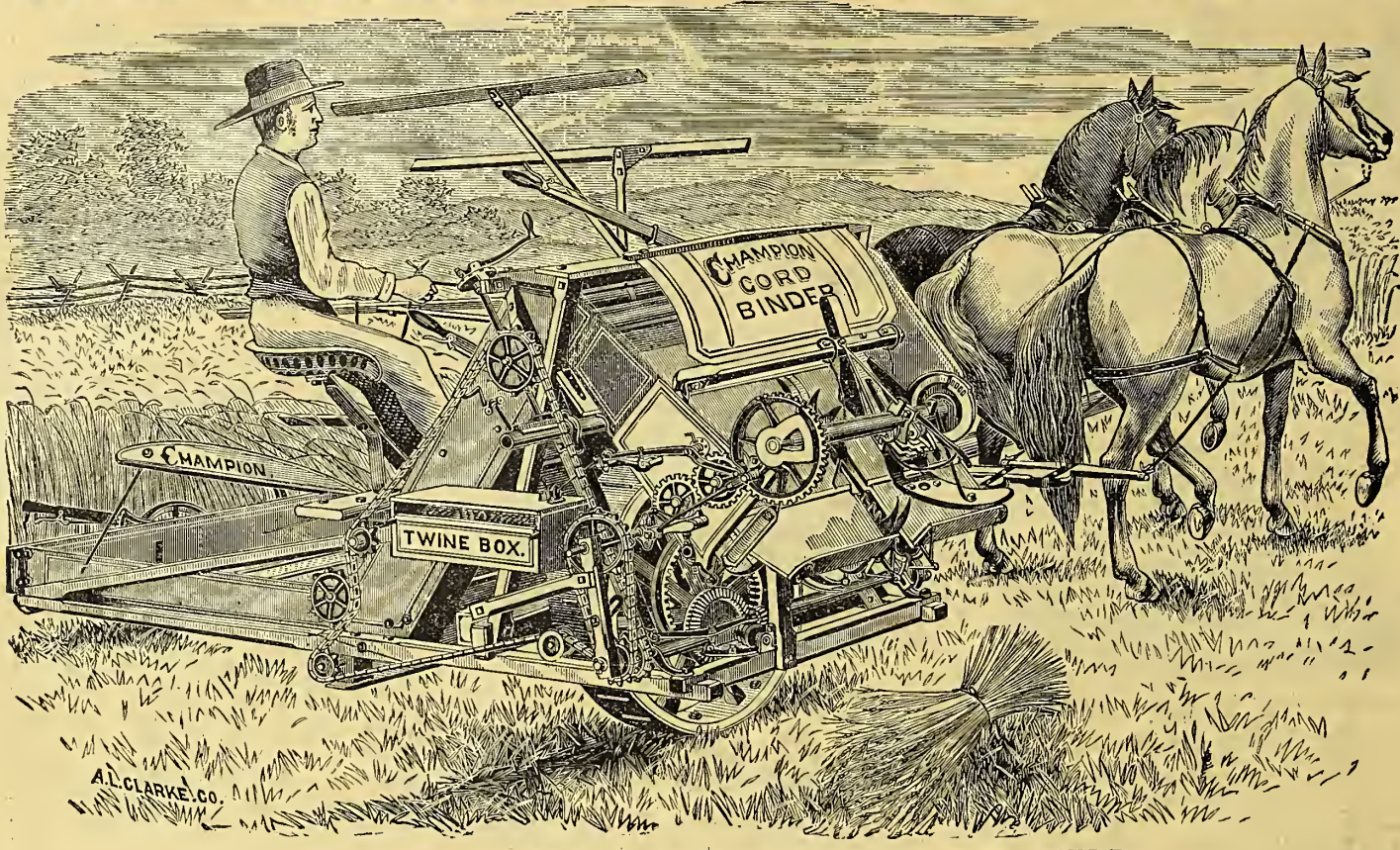

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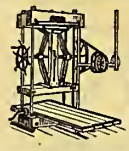

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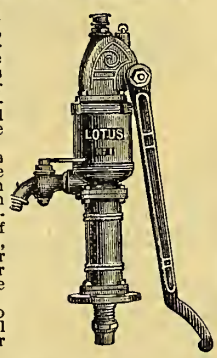

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JULY, 1882.

AMERICAN AGRICULTURIST.

FOR THE FARM, GARDEN & HOUSEHOLD.

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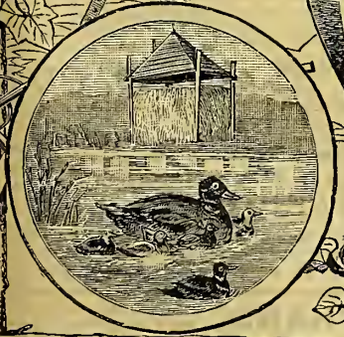

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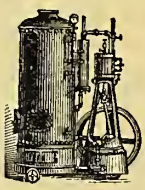

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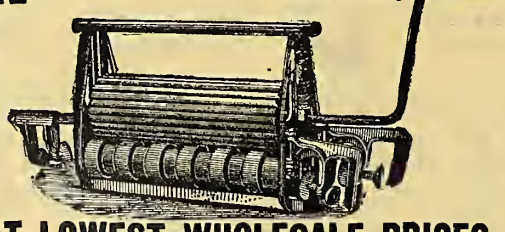

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AMERICAN AGRICULTURIST

For the Farm, Garden, and Household.

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VOLUME XLI.—No. 7. NEW YORK, JULY, 1882. NEW SERIES—No. 426.

THE NEW ARRIVAL.—A FARM SCENE.—*Sketched and Engraved for the American Agriculturist.*

Having become familiar with almost every phase of rural life by a long residence in the country, and by much travel and observation, we can not avoid a slight suspicion that the artist has, in the above sketch, drawn a little upon his imagination. If called upon as an expert to testify upon this point, we could not pronounce it quite "true to nature." Still we would not much censure him, or join in any laugh at his expense, for the picture is at least founded on fact. Though the new comer does not yet exhibit those fine "points" that judges at the cattle shows discuss with so much gravity, a maturer age may develop them. We can well comprehend the genuine pleasure the farmer himself feels at this substantial addition to his herd. As for the lad, what boy ever failed to be strongly interested in every infantile addition to active life on the farm, be it colt or calf, lambkin or chick, puppy or piggie? We may even conceive Mr. Taurus to have a paternal pride akin to that of the maternal bovine.—No doubt all animals are endowed with some curiosity. We witnessed on a western prairie the effort of a hunter to get within gunshot of an antelope. Secreting himself, he waved his hat on the top of a ramrod. The antelope exhibited unmistakable curiosity, and moved forward to investigate, until he came within reach of the fatal bullet. The horse is alarmed at the first sight of the railway train, and starts off at rapid pace, but soon circles round, and gazes with mingled astonishment and fear at the puffing, snorting iron steed, which so easily and swiftly draws the ponderous train along.—We have failed to observe much curiosity exhibited by the capaciously eared member of the group, but he is certainly entitled to a moiety of this faculty, by reason of his semi-equinine ancestry.—The sheep is always alert on the approach of any strange object, but we have attributed this chiefly to fear.—As for the goat, we doubt if anything could be startling or attractive enough to divert his attention, if engaged in stripping the bark from a fruit or shade tree, or from a crow-bar, as for that matter.—Still our artist may be a closer observer of animal instincts and manifestations than is the writer, and possibly he has witnessed something very like the picture. It is certainly a very pretty conception, and lacks only representatives from the poultry yard and piggery to make the picture complete—at once a pleasing and instructive farm scene, if not indirectly a burlesque upon what often takes place in regal residences when a new comer arrives.

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☞ **See Page 308 for some Special Premiums for July, which are worthy of attention.—A large number of valuable original articles, too many of them to be specified, will be found all through the reading columns, from page 274 to 300, and on pages 305, etc. Not a little useful information wil be obtained by consulting the announcements of an excellent class of Advertisers on the cover pages, and on sundry pages from 301 to 312.**

AMERICAN AGRICULTURIST.

NEW YORK, JULY, 1882.

Suggestions for the Season.

The Summer Fallow.

The summer, or bare fallow, was formerly considered the best method of preparing land for the wheat crop. The exposure of the soil to atmospheric and other influences for a whole season has an excellent effect, but it is not necessary. A crop may be grown, and if rightly attended to, the succeeding grain crop may be as good as when preceded by a season of fallow. The good results of a fallow are the most evident upon clay land. The mechanical texture of the soil is improved by the frequent plowing and stirring, thus opening the soil for the free entrance of the air, and the better circulation of the soil-water. These mechanical improvements facilitate the decomposition of some of the constituents of the soil, liberating Potash and other essential elements of plant-food from the locked-up and insoluble chemical compounds of the soil. The Ammonia of the atmosphere, which enters the soil with the rain, is more readily absorbed, and, last but not least, the vegetable matter in the soil is more quickly and thoroughly decomposed, and thereby made available for sustaining the growing plants. All these points are gained by a summer fallow upon a heavy clay soil, but with a light soil there is no such demand for mechanical improvement, and no corresponding advantage gained in a chemical point of view. Nearly all that can be gained by a year of clean culture is obtained by a hoed or root crop. With it the weeds can be killed as effectually as in the fallow; the soil will receive enough culture to make it sufficiently open for the circulation of air. There will be a large gain in the amount of the nitrates and other valuable nitrogen compounds. In the fallow these are formed during the hot months of the year, and, being very soluble, are washed out of the soil by heavy rains, while, if there is a crop, the nitrates, etc., are taken up as food, and stored away, to be used for some succeeding crop. Besides, the root crop will furnish a large amount of excellent food for the farm stock, and finally yield a quantity of valuable manure, to be returned to the soil. With a root crop introduced into the rotation, there is seldom a demand for a summer fallow.

Loading Hay and Grain.

It is not every farm laborer who can properly arrange hay or grain upon a wagon. This is perhaps the most skillful work of the hay or harvest

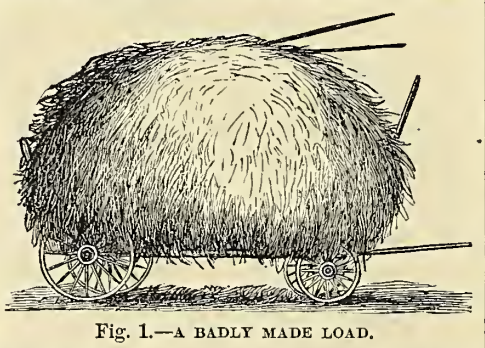


Fig. 1.—A BADLY MADE LOAD.

field. It must be done with despatch, and in a manner that will economize space and insure safety of carriage. For this purpose a good hay-rack or "rigging" is essential—one with broad wings and of sufficient length, that the load need not be like a stack when complete. A straight and stout rein-holder or "ladder" at the front end of the rack is a great aid in making a well-balanced load. Figure 1 shows a too common form of a load of hay; it is not sufficiently spread out at the bottom, and the upper portion is very apt to slide off. The corners should be built first, and bound by the hay afterwards placed in the center of the load. The load may gradually lengthen and widen with each layer put on, the center being kept somewhat hollow until bound at last by a row of forkfuls along the middle. The form of a well built load is shown in figure 2. Such a load does not easily upset or slide from the rack. The well-formed load is the easier to make after a little thought is given to the work.

When forks are left on the top of the load, they should be placed with the handles sloping backwards (figure 2), and not as shown in figure 1;

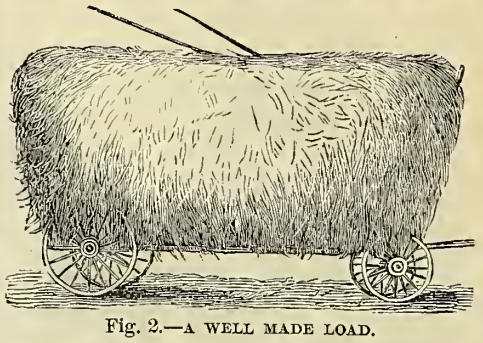


Fig. 2.—A WELL MADE LOAD.

when driving into a barn, they might otherwise catch in the door-way or against a beam, and do serious damage to man or beast.

Take a Holiday.

The Fourth of July is the great summer holiday, and if possible every farmer should so arrange his labor that "all hands" may stop work and enjoy it. It seems to us that a picnic party made up of a few families in the neighborhood is not far from the best way to make the day a pleasant one. Some quiet, shady spot, not too far away, may be selected where the table may be spread with the best products of the farm and garden. The older members of the party will have a good time in social talk, thus getting better acquainted with each other, while the children can run in the woods, gather flowers, fire off their crackers and torpedoes, etc. A day thus spent is far from being a day lost, as, properly used, it breaks the monotony of daily farm labor and serves to sweeten farm life.

The Buckwheat Crop.

Buckwheat is the latest grain crop of the season, and in the latitude of New York is usually sown from the last of June to the middle of July. It is frequently sown as a filling crop, that is, on ground where some other crop has failed. It makes an excellent cleansing crop on foul or rough land, especially upon rich soil where it makes a rank growth and smothers out all other plants. Buckwheat is used to some extent as a green manure to be turned under for wheat or rye. The buckwheat plant is a deep feeder, and has the power of obtaining the food elements when present only in small quantities in the soil. Light sandy soils, deficient in vegetable matter, can be brought up to a good state of cultivation by first growing buckwheat as a green manure crop, followed by clover which is afterwards turned under. Though buckwheat will grow on comparatively poor soil, it makes good use of a light dressing of barn-yard manure or some quick-acting fertilizer. A hundred pounds of Peruvian guano or an equal weight of fish scrap will greatly raise the yield of a buckwheat crop on a poor soil, and prove a profitable investment for outlay.

The harvesting of buckwheat is quite different from that of other grains. The grain "shells" or drops from the straw very readily, and therefore must be gathered with special care. It is best to cut it with a cradle and leave it in the swarth until the next morning, when it should be rolled and set on end while it is moist with the dew. After standing for a few days it is ready to be threshed. The straw has no special value as fodder, but should be used as a litter and absorbent of liquid manure. The grain makes an excellent food for poultry, and when its flour is in the form of buckwheat cakes, it is highly prized, especially in cold weather.

Applying Fresh Manure.

By fresh manure, we mean not only green dung from the stables, but that which has been in the compost heap a month or more, undergoing fermentation. It may be true that in the compost heap, properly handled, there is no loss of fertilizing material. There is frequently loss from surplus manure lying idle in the compost heap, or barn cellar. Of course there is occasion, in the regular routine of farm crops, to apply large quantities of manure at one time. But where the manufacture of manure in the compost heap is made a leading business, there will be a surplus for which no hoed crop calls. Any surplus fertilizers in midsummer or autumn, can be used economically upon the grass crop. They will begin to draw interest as soon as spread, payable at the next harvest. If you have any meadows that cut less than two tons to the acre, top-dress as soon as the hay is gathered. If they yield two tons, top-dress and get three tons or a second cutting. Keep manure on interest, and it will pay better than Government bonds.

Hungarian Grass.

A large crop of good fodder may be secured upon early rye or other stubble by Hungarian Grass. The ground should be prepared as for oats or any other grain, well manured, and the Hungarian sown broad cast and harrowed in slightly. The seed may be sown as late as the middle of July, about one bushel per acre, but the best results are obtained from sowing in early June. If it is desired to have green fodder for a number of weeks in autumn, the Hungarian seed may be sown at intervals of a week or so for upwards of six weeks. The ripe heads of this grass contain a large number of hard and sharp awns or bristles which are irritating to the stomach of animals, especially horses. This trouble can be avoided by cutting the crop soon after the heads mature, and before the awns have grown to full length and become hard. This grass when cured is equal in feeding value to good hay. If there is a demand for late fodder, it would be well to sow some Hungarian during the present month.

The Clover-Worm.

This insect, introduced from Europe, has been occasionally noticed for the last twenty years, and now, in some localities, from New England to Michigan and Illinois, it often occurs in troublesome numbers. It attacks the clover in the mow or stack, webbing the stems together with multitudes of silken threads, among which is such an abundance of black excrement as to unfit the

CLOVER-WORM (*Asopia costalis*, Fabr.)
1 and 2, Larva; 3, Cocoon; 4, Pupa; 5 and 6, the Moth; 7, the Web.

clover for feeding to animals. The white cocoons are present in such numbers, that one, without close examination, would pronounce the hay to be mouldy. The insects are usually found at the bottom of the stack. The engraving shows the insect in its various stages—1 and 2 represent the larva, 3 the cocoon, 4 the pupa, 5 and 6 the moth, and 7 the white web in which the worm for the most part lives. The moth is one of our prettiest species, being of a reddish-brown color, with golden-yellow markings and fringe to its wings. It is suggested as a preventive, that hay containing clover should not be stacked twice in the same place, and that the stack should be placed upon log or other open foundations, that will allow of a thorough ventilation of the hay from below.

Hints to the Harvesters.

The laws of health require careful observation especially at this heated season of the year. By taking some precaution much may be added to the comfort of those who must work in the hot sun. It is very important to avoid drinking much cold water when overheated. It is much wiser to go thirsty than to drink largely of ice water. The fluid greatly increases perspiration, thins the blood, weakens the system and induces continual thirst. Cool water poured on the wrists or held upon the temples reduces the temperature of the body, and is refreshing without being injurious. The head needs special protection. A large straw hat, not black, is a great comfort, and if some green leaves —cabbage are excellent—are put in the crown there is far less danger from the intense heat. A handkerchief fastened to the hat and falling over the shoulders will keep the bright, burning sun's rays from the neck. This latter precaution is not necessary for those who are "toughened" by daily labor out-of-doors, but is a wise precaution to all others.

Care of Live Stock for July.

A sheet of cotton cloth is a great protection to horses, screening them from flies, dust, and heat, while working in the harvest field. Especial care must be taken in keeping the horses clean. An occasional washing with a soft sponge and carbolic soap cleans and cools the skin, aids perspiration, drives away the flies, and is in every way healthful and refreshing. Horses may be given a bath in a stream at evening, provided they are not warm from work, and are not kept in the water more than a few minutes. If the horses are at pasture at night, they need a good, generous feed before being turned out. When kept in the stalls, a mess of green fodder may be given daily.

During the hot weather, cows suffer if kept in a shadeless pasture. A cool, dark and clean stable is much preferred by them. They need an abundance of pure water, a plenty of nutritious food, and should be kept as comfortable as possible.

Sheep that are intended for the butcher need to be pushed forward with liberal feeding. A quart of mixed ground feed to each animal daily, with the pasturage, will bring them quickly into good shape for the market. Store sheep need good pasture, with a plenty of shade. If dysentery appears in the flock, remove the sick animals to a cool shed, and give one ounce of castor-oil, with bran or oat-meal mush. Should maggots be found upon the sheep, tar may be applied to the affected parts. Look well to the flock that sheep do not suffer in any way during the hot summer months.

Growing young pigs for the early market are often very profitable. They may be ready in 100 days from birth, if well fed. At first the sow needs to have rich food in abundance, that she may have a full flow of milk. After a few weeks, let the young pigs have meal and wheat middlings.

Now is the time to weed out the poor hens in the poultry yard. Poor layers or bad mothers can be quickly fattened in a coop, when they are ready for market, and will command a good price.

More Strawberries.

Those who wish to increase their Strawberry plantation, should set about it at once. The Strawberry plant is a most generous one; besides giving a crop of fruit, it also affords a crop of plants. Long slender stems push out from the crown of the plant, and a bud forms at the end; roots soon appear to fix this bud to the soil, and it becomes a new plant; another runner pushes from this, and so on. A strong plant will, in a single season, surround itself with a colony of young plants. If these new plants are left where they grew, the oldest of them will bear fruit the next season. Ordinarily, we take these up in autumn or in the following spring, to plant them in a new bed. Being thus disturbed, while these plants may bear a few berries, they require to grow one summer, in order to become strong enough to bear a full crop. It makes but little difference whether we take up these plants and set them in a new bed next autumn or in the spring of 1883; they will need all the season of 1883, in which to get well established and give an abundant yield in 1884. If we can manage to remove these new plants without disturbing their roots and checking their growth, the oldest of them will give as good a crop as if they had been left where they had taken root. This can be done by what is called "Pot-layering." Having practised and given an account of this method some fifteen or more years ago, we were much amused to see, not long since, an European journal announce it as a "grand discovery," and one likely to "revolutionize Strawberry Culture." At present all our dealers in small fruits offer "Pot-layered Plants," of course at a somewhat higher price than for common plants, as they cost much more in labor. The method is very simple, and any one can readily increase his Strawberry beds in this manner. Small pots, not over three inches across, are filled with good soil and plunged in the Strawberry-bed, just under the bud, at the end of a runner, so that its roots, instead of striking in the soil of the bed, will push into the soil in the pot. The pot should be set down in the bed, so that its edge is not above the general surface, else it may get too dry. As the wind may blow the runners about, it is well to lay a small clod on them, to hold them in place, or a small hooked twig may be used. In two or three weeks the new plant will be sufficiently provided with roots to allow the runner that connects it with the parent plant to be severed. It is then to be taken to the new bed, the ball of earth containing the roots turned out and placed in a hole made to receive it. It will go on and grow without any check. To prevent any injury from drouth, it will be well to mulch the plants with a little hay or straw as they are set out. The sooner the new plants can be transferred to their new bed the better; if it can be done in August, a full crop may be expected next year. Suitable pots cost very little at the potteries; those who live at a distance from these, can contrive some substitute. A wooden, tin, or other receptacle, may be contrived to hold the soil. We have great confidence in the ingenuity of our people to supply something in the place of pots; for did not a lady, some years ago, write us that, being unable to get small pots for her tomato plants, she used the shells of ducks' eggs! Prob-

POT-LAYERING STRAWBERRIES.

ably a mere coil of tin, birch-bark, or even pasteboard, if carefully handled, would serve the purpose, which is to keep the roots from disturbance until they can be taken to their new place.

Blackberries and Raspberries.

Every one who has gathered wild Blackberries is aware that the stems grow to the hight of six or eight feet, and gracefully bend over at the top. The lower part of the cane bears little or no fruit, it being nearly all at the top of the bush. The same happens on a smaller scale with the Raspberry when left to itself. While we cultivate the Blackberry for the sake of better fruit than the wild plants usually afford, we should also endeavor to have more of it, and more conveniently placed on the bushes. From questions that are asked, it is evident that all are not aware that the stems of the Blackberry and Raspberry (at least those cultivated for fruit) are only biennial. The plant throws up from the root, often at some distance from the old stems, vigorous shoots, which grow rapidly, and by autumn will become ripe and hard canes, like the old ones. The old canes, which have given a crop of fruit, have completed their work, and, though they may remain alive for awhile, will all be dead by next spring. When the fruit has been gathered, it is best to cut the canes entirely away, to give room to the new ones. These should have more attention than they usually receive; if left to themselves, they will become just like the wild plants, straggling, and with their fruit all at the top. Not only on acount of the greater quantity of fruit, but for the ease in picking it, should the canes be pruned. Blackberry canes should never grow over five feet, and many prefer to keep them at three feet high. Whenever the green shoot has reached the desired hight, remove the top, or growing point, which, being tender, may be pinched off with the thumb and finger. Soon after this is done, branches will start along the stem, and these should also be pinched, the lower ones when eighteen inches long, and the upper when twelve inches. By a little attention, once a week, or oftener, giving the needed pinching, the Blackberry, instead of being a long straggling shrub, catching at the clothing of all who approach it, may be brought into the form of a neat pyramidal bush, which, the next season, will be loaded with fruit from bottom to top. The same treatment may be followed with Raspberries, which are usually kept shorter. One of the greatest pleasures in gardening is found in training and shaping plants, and making them grow as we wish, and in nothing are the effects of this more strikingly shown than in the Blackberry and Raspberry.

The Red-Humped Caterpillar.

Young Apple and Pear trees, and sometimes other fruit trees, are frequently defoliated, or have large branches completely stripped of their leaves in late summer or early autumn, by the Red-humped Caterpillar. The eggs are usually deposited in July, in clusters on the underside of a leaf near the end of a branch, and the young caterpillars eat downward, making clean work of the foliage as they descend. The full-grown caterpillars (fig. 1,) are an inch and a quarter long; the general color yellowish-brown, paler on the sides, and striped length-wise with slender black lines; the head is coral-red, and on the top of the fourth ring is a bunch or hump of the same brilliant color; there are several short black prickles along the top of the back. The caterpillar tapers towards the tail, and this end is always elevated when it is at rest. When full grown, all the caterpillars of the same brood descend to the ground at the same time, seek a hiding place under leaves, or just below the surface of the soil, where they form cocoons, and assume the chrysalis state (fig. 2), in which they remain until the following June, when the perfect insect issues as a small, neat-looking moth, of a general light-brown color. The fore-wings are dark-brown along the inner margin, with a dark-brown spot near the middle. The wings expand from an inch to an inch and three-eighths. If these caterpillars are noticed when first hatched, they will be found all near together, and may be readily destroyed.

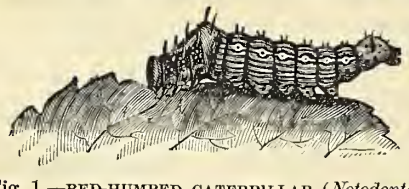


Fig. 1.—RED-HUMPED CATERPILLAR (*Notodonta concinna*).

Fig. 2.—PUPA.

Thinning the Fruit.

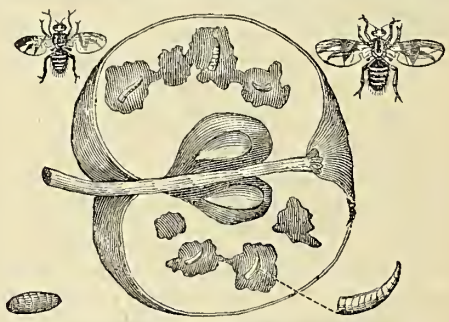
In articles last spring, we gave all that need be said in favor of thinning fruit, and cited some instances to show the profit of the operation. Those who thinned peaches, pears, and apples, soon after the fruit had set, though at the time they thought they were thinning severely, now that it has increased in size, are surprised at the abundance of fruit on their trees. It is rarely that even the experienced remove enough at the first thinning; novices never do, and it is often necessary to go over the trees again when the fruit is half grown or more. At this time we can see, what is not manifest when it is small, any imperfection in the form of the fruit. Pears, especially those which grow in clusters, will become one-sided by the crowding, and this should be kept in mind at the later thinning, and the least perfect removed. In this, as well as all other operations on trees, some thought should be put into the work. Those who are intending to compete for premiums at the autumn shows, should not lose sight of the fact that thinning is a direct and legitimate means of producing "the best six" or "best twelve" specimens of pears or other fruit. Those who have an eye to the prizes offered for grapes should begin preparing for them now, and not let three clusters grow where a single one would be better.

Sticks and Strings.

"Its all sticks and strings" said Hood's funny Mrs. Gardiner, in speaking of the Dahlia, yet sticks and strings properly employed are most useful in the garden. If people will grow Dahlias, they can not hope for success without them. It is very disheartening to grow a Dahlia up to a point where its swelling buds give a promise of bloom and have a sudden storm break off its largest branches. Long green sticks with white heads are offered for sale as Dahlia stakes. The idea evidently is to put one of these to each Dahlia and tie the plant to it. Aside from the fact that these sticks are especially conspicuous, they give the support just where it is not needed. Every one who has grown Dahlias knows that the main stalk takes care of itself, and that it is the breaking down of the side branches by the winds or from being heavy with rain that disfigures the plant. If, instead of putting one green stick with a white top to a Dahlia, we place to each main branch a short stake to which it can be tied in such a manner as to relieve the weight, then a good work will be done. The stake need not be green, or any other color, if properly used it need not be visible at all and a stake from a tree or shrub with its natural bark will answer every purpose. At this time there will be other plants besides Dahlias that will need stakes, especially Gladioluses and Tuberoses, both of which become top-heavy as flowering time approaches, and the timely aid of a stake is essential to success. Ordinary brush will answer quite as well as painted stakes, for if a stake shows, it is too large. The most unpretending stakes, if they have the one requisite—strength—are the best. As to strings, Bass-bark is the regular gardener's tying material, that from a Russian mat being preferred, though the bark from our own Bass-wood is quite as good. But every one cannot easily get Bass-bark, and it is possible to keep a garden in order without it. The excellence of Bass-bark consists in its being a soft and yielding material; it is strong enough for most uses, yet it will yield and break if the growth of the plant requires it. If we could have but one string in the garden, it would be cotton twine. Bass-bark is better for some uses, but on the whole, if confined to one, cotton twine, of the best sort is preferable. This is a twine without any starch or size. That commonly used in the grocers' and other shops is poor stuff made stiff with size. On the sea-board we get at the ship-chandlers' stores what is known as "sail twine," very soft, and wonderfully strong. No doubt such twine can be found elsewhere. As next to this cotton twine we have found a jute twine, not so strong as the cotton, but very soft and cheap. In the absence of other ties, we have used worn cotton cloth, such as a sheet or part of a worn out shirt; this is easily torn into strips of convenient width, and while the material is strong enough for most purposes, it will break away if the stem increases in growth.

The Apple-Maggot.

Besides the well-known Apple-worm, or Codling-moth, there is in some localities, especially in the older States, the Apple-maggot. It differs from the Codling-moth in many respects; the parent insect is not a moth, but one of the two-winged flies. It is not, like the other, an imported insect, but a native which has long inhabited our wild apples and the haws, or fruit of our thorns, and is found in cultivated fruit, here and there, all over the country. The engraving shows an infested apple, and the insect in its different stages; the perfect fly, with its transparent wings, being shown above, while the maggot and pupa are given below. The excavations in the apple show that the larvæ enter at no particular place, and do not, as in the case of the Codling-moth, seek the core. The destruction of the infested fruit by feeding it to pigs, or making it into cider for vinegar, is one of the obvious means of preventing its increase.



APPLE-MAGGOT (*Trypeta pomonella*).
Perfect Insect; Larva and its burrows; Pupa.

A Hint in Time about Ivy.

Those who have given any attention to decorating their rooms with living plants, are aware that there is none so useful for this purpose as the European Ivy (*Hedera*). Instead of waiting until falling leaves remind us of house-plants, and then grubbing up and potting an Ivy, it is better to prepare the Ivies now. This plant is always pleasing, whether used around a window-frame, over a door-way, run over the frames of pictures, or, as we have seen it, carried completely around the cornice of a room. It will endure much neglect, and will amply repay all the care that may be given it in washing the dust from the leaves, and good culture generally. But we do not now speak of its culture, but would only say a word about starting it. It is most easily propagated. Procure branches two or three feet long or more; take any wide-mouthed bottle or jar; place some earth in it, perhaps a quarter full, add water to nearly fill the vessel, and, removing the lowest leaves, put the ends of the Ivy branches in this thin mud. Set the whole in a shady place out-doors, or on the piazza, and add water to supply that which evaporates. In a few weeks the stems will have abundant roots, when they may be potted, and by autumn be much better for use in the house than

any plants dug up from the ground. No plant yields more readily to training; it may be continued with a single stem many feet in length, provided that all side-shoots that start are nipped off, or if several stems are wished for, pinch off the growing end, and some will soon start.

A Larger Patch of Beans.

The season of the maturing of the Bean crop is short, and there is plenty of time to enlarge the acreage of this staple crop. White Beans from Germany are sold in the New York market for $3.10 to $3.50 per bushel. White American Beans are scarce at $5.00. This is occasioned by the drouth of last summer, and is a very unusual state of the market. It is estimated by the dealers in this article that a half million bushels have been imported. Beans are among the cheapest and most nutritious of our table supplies, and in some parts of the country are served regularly every Saturday evening and Sunday morning, with the brown, or Indian loaf. Emigrants from New England generally carry these dishes with them wherever they settle. Mediums and Marrowfats are good, but they soon lose ground where the Kidneys and the Limas are once fairly tried. The Large White Kidney is the favorite bush Bean for the main crop in the garden, and the Improved Lima is hard to beat for pole Beans. Plant a few more beans.

Preparing for Winter Flowers.

Those who have small green-houses or cultivated flowers in their windows, have set out their geraniums, and other quick-growing plants for the summer. Many make the mistake of taking up these plants in autumn, after they have grown all the season in the open ground, and potting them to be replaced in the window or green-house. The result will always be "long-legged," misshapen plants, which, instead of blooming satisfactorily during the winter, will take a long time to recover, and never be worth as much as new plants from cuttings. Such plants may be prepared for, this month and next, and with very little trouble. Of course those who have green-houses with appliances for propagating need no directions, but many lovers of flowers have to content themselves with such plants as may be grown in the windows of the living rooms. These become attached to their plants, and when one is set out in the bed they expect it back again. When such a plant goes out, consider it thrown away, for it may as well be, and set about replacing it. The following method will give a few plants with little trouble. Take a common store box, such as a starch or soap-box, knock off both cover and bottom, and if need be strengthen it with extra nails. Tack over this a piece of cotton cloth and the frame will be ready. Select a place where the soil is light and sandy, or if the ground is all stiff, spade in some sand or coal-dust to make it light and open, and place the frame over it. If cuttings of geraniums, cupheas, verbenas, or other such plants are placed in the soil and covered with the frame they will soon take root and form nice specimens, which, when they begin to grow, may be potted and be ready for winter. If the frame is where it will be shaded in the middle of the day, all the better; if not, it may be tilted a little when the sun is very hot, to give ventilation and prevent overheating.

Dried and "Evaporated" Fruit.

Within a few years there have appeared in the market very superior dried apples, peaches, etc., which are known in the trade as "Evaporated Fruits," to distinguish them from the ordinary dried fruits. In the common method of drying fruit, spreading it in the sun, or in stormy weather placing it near the kitchen stove, the long exposure to light gives it a dark color; besides, it is liable to be soiled by insects and by dust. The attractive appearance of the "evaporated" articles allows them to command a much better price than the others, and many who dry fruits are inquiring about the matter. The evaporating process owes its superiority chiefly to the fact that the drying is done rapidly, and in the dark. There are half a dozen or more patented evaporators, but this is a feature common to all. They differ in their mechanical arrangements for handling the fruit, and these are important. The apparatus consists of a tower, with a stove or furnace below for heating the air, platforms or stages for holding the trays of fruit, which are so arranged upon endless chains or otherwise, that they may be raised or lowered. Being in a current of warm, dry air, the moisture is removed from the fruit with great rapidity, the drying, which in the sun often takes days, being completed in a few hours. The majority of the evaporators are in capacity far beyond the needs of an ordinary orchard, while the cost, though it varies, is greater than one would be likely to incur for an apparatus for his own use. As one evaporator will prepare the fruit of many orchards, several fruit-growing neighbors might unite in the purchase, and run it in co-operation, or better still, for one with capital to establish an evaporator, if the others will agree to supply him with fruit. While we have said that the various evaporators agree in essential principles, they vary much in details, and the best advice we can give those who inquire about them, with a view to working up the coming crop, is to lose no time, but send at once to the makers for their various circulars, and carefully compare their capacities, first cost, and mechanical details. That there is any important difference in the quality of the product, we do not believe. The very white "evaporated" apples are made so by bleaching them, sulphur being burned at the proper stage of the process. For family use, there are several dryers, the same in principle as the evaporators, but being upon a much smaller scale, all the moving of the trays is done by hand. These, or some of them, at least, if carefully managed, will turn out as fine a product as the large apparatus. In October of last year we showed how an excellent family dryer can be made with hot-bed sashes. The fruit dried in this will not be so light-colored as that dried in the dark, but vastly superior to the ordinary fruit. The same article gives the reasons why we can not comply with requests to give directions to make a home-made evaporator.

Why so few Chrysanthemums?

The Chrysanthemum is a plant that has every element of popularity, and we have often wondered at the comparative neglect of it. There are a few old sorts, a lilac, a yellow and a white, that are to be found in the old country gardens, that have undergone neighborly division for many years. Some of the new kinds are so beautiful, and they all come into bloom in the garden at a time when there is very little else, and are so bright in the dull days of autumn, that we should be glad to see more of them. Chrysanthemums, as a general thing, with us, are treated like other hardy plants; put out and left to take care of themselves, until the clumps get too large, when they are divided and reset. They will abundantly repay a little care. Instead of allowing the roots to throw up a small thicket of stems, remove all but four or six, and as these get large, give them stakes to prevent the autumn storms from breaking them down when loaded with flowers. The chrysanthemums are admirable for window blooming. If for flowering in-doors, the plants, as soon as buds are formed, should be potted; they will soon recover, if placed in the shade for a few days; the pots may then be plunged in the soil, or placed in a frame and surrounded by coal-ashes. When cool weather comes they are to be taken up, cleaned, and taken in-doors, giving them abundant air on mild days. Whether in pots or in the open ground they are apt to be infested by a plant-louse, which should be treated with tobacco water; a woolly caterpillar is sometimes destructive; this is not numerous and may be hand-picked. The plant is one that yields readily to training, and by pinching in its early growth may be formed into neat compact bushes. After the potted chrysanthemums are through flowering, the stems are to be cut down and the pots containing the roots placed in the cellar until spring. To the old large-flowered and the small-flowered, or Pompone varieties, there have been added of late years the exceedingly beautiful Japanese Chrysanthemums, some of which are cultivated by florists for cut flowers.

About Watering Plants.

Unless one has an abundant supply of water, so that its use, when once begun, can be continued, it is better, as a general thing, to not water at all. In the drouth which we so generally have this month, a mere sprinkling of the leaves is worse than no watering at all. Still, we all may have in the vegetable as well as in the flower garden certain plants that we would like to favor. In such cases, instead of watering the plant, the water should be applied to the soil; draw the earth away from the plants, forming a sort of basin around them; then pour on water gradually, and let it soak in around the roots. Afterwards return the removed dry earth to its place, and this will act as a mulch, to keep the moisture at the roots.

A Well Kept Lawn.

We have already suggested that the use of the lawn mower should not be governed by any rule, such as "mow once a week," but by the condition of the grass. In mid-summer more injury may result from mowing too frequently than from cutting too seldom. We would now call attention to the weeds in the lawn. Weeds here, as elsewhere, are annual and perennial, and they may be undesirable grasses or other kinds of plants. Take the perennial weeds, for example; these come from seeds brought on in manure or taken there otherwise. These are cut back each time the mower is used, and are hardly, if at all, noticed in the spring months. In mid-summer, when we mow less frequently, to give the grass a chance, these weeds which we have been unintentionally pruning in the early months, are quite ready to assert themselves. Plantains, Docks, Thistles, and others not before noticed, will in the short rest we give to the grass, make themselves conspicuous. The best treatment for such perennial weeds, even on a large lawn, is hand weeding. A long knife or a chisel-shaped "spud" thrust well down to cut the root, will allow the plant to be pulled up without disturbing the grass. In England they have a contrivance for killing such plants, which places a few drops of oil of vitriol (sulphuric acid) on the centre of each. We have not had occasion to try this, but those who make the experiment should keep in mind the destructive effect of the acid upon the clothing, and the fact that it should not come in contact with the fingers, etc. Annual weeds as a general thing are of but little consequence after the first year, as the frequent mowing subdues them. One of the worst of these is a grass, the "Crab-grass" (*Panicum sanguinale*). It appears late and its prostrate stems lie close to the ground, taking root at every joint. This is also known as "Finger grass," and bears its flowers and seeds in a panicle that looks like the frame of an umbrella. Whenever the flowers of this appear the lawn should be mowed to prevent the ripening of seeds, and it will be safe to rake off the mowings, for fear that the immature seed may be ripened after the grass is cut.

Plant-Lice.

It would seem that almost every plant had its particular louse. While these are among the most abundant of insects, they are also those most easily kept in control. While some insects, like the Rose-bug, resist all applications, the tender-skinned plant-lice are easily subdued by tobacco in any form, whether dusted upon them, applied in the liquid form, or as smoke. What are known as "tobacco stems" may be had of the cigar-makers, often for the carrying off, or at any rate for a very small price. These may be burned for plants in greenhouses, but for those out of doors the application must be in a liquid form. Fill a barrel with the stems, crowding them down firmly, and then add water; hot water, if in a hurry, but

cold will answer. The tobacco "tea" thus made will not injure the most delicate plant, but will be very destructive to the lice, upon whatever plant they may be. The liquid may be applied by any of the many garden pumps, or even with a common watering pot, as the case may require. It sometimes happens that the lice collect in great numbers near the ends of the branches of trees; in such cases it will be well to bend the branches down, and immerse the ends in the tobacco-water.

Take Care of the Tomato Vines.

If there is any one subject that would seem to be exhausted, it is the Tomato Trellises. During the past 20 years we have described probably twenty different trellises, and the story of the whole is: keep your Tomato vines from resting upon the ground. One of the simplest methods is, to drive in stakes at an angle of 45°, and nail, or lash to these, light poles of any kind; in the absence of poles use wire. The whole object is to so place the vines that they can be reached on all sides, not only that we may free them from "the worm," but also save the fruit from decay. If the fruit is left in direct contact with the soil, decay sets in soon after ripening begins; supporting the clusters of fruit, where all can be seen, will allow of the removal of the poorly shapen, and when they are too much crowded, they may be thinned. The French advise training the Tomato to a single stake. We have tried this and do not like it. The clusters of fruit, as they approach maturity, become very heavy, and just as they are the most promising will break away from the main stem. Such clusters can not be readily supported when the plants are trained to a single stake, but on a trellis of almost any kind they may be kept up. The Tomato may be cultivated in two methods: as a field crop in which it is allowed to have its own way; or in the garden, where those who appreciate excellence in vegetables will find the Tomato to amply repay whatever care may be given to it. Were it only for the facilities it affords for catching "The Worm," we should always provide some kind of a trellis for the Tomato. Besides this, the handsome appearance of the ripening fruit is greatly in its favor.

Think of This a Moment.

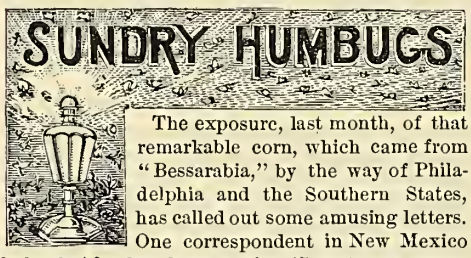
A grand "Mutual Aid Association"—with a membership of over a million, embracing residents of every part of this country and many in other lands—with no admission fee or after assessments—with no self-seeking among its members, and no rivalry except in good works—with a manifest desire and effort on the part of each to aid every other member in any way practicable—such an association is surely most desirable, and no one connected with it could fail to be much benefited.

Well, an Association somewhat like the above has been in existence for a quarter of a century and more. It is made up of Readers of the *American Agriculturist*. Only one defect has been found in its working, viz., the failure of some of the members to appreciate their opportunities for helping each other.—To illustrate: If a reader knows of some method of doing a particular work, or of some simple labor-saving or labor-helping device, which is not in common use by all his acquaintances, the strong probability, indeed the certainty is, that there are tens of thousands, if not many hundreds of thousands, elsewhere who are unacquainted with it. Now if every such reader will send a description of the affair to the Secretaries of the Association (the Editors of this Journal), they will put it in proper form for the type, introduce engravings if these will help to a better understanding of the matter, and then multiply copies and send them to every member of the association through the length and breadth of our own land, and to a multitude of foreign members. Those seeing it will talk of it to their neighbors, and they to others, and thus the smallest or largest helpful item will reach and benefit many millions.

To drop the figure, we wish to earnestly invite every reader of the *American Agriculturist* to think over the matter, and see if he does not know of something in his own experience or observation, which may not be known to everybody else, but which if known might be helpful and therefore useful to others. In thousands of instances, our readers have written that some trifling hint has been worth a great deal to them. We have scarcely ever gone over the smallest farm, or barn, or live stock yard, or dwelling, or garden, or orchard, without seeing and learning something we had not known, or seen elsewhere—something worth talking about to others. But we can not visit one place in a thousand that we would like to; and we feel certain that among our intelligent, inventive, go-ahead readers, there is scarcely one who has not himself in use, or seen among his neighbors, some good method or device, or mode of doing this, that, or the other thing, different from ten thousand others.

Again, therefore, we ask as a matter of interest, not merely to the Editors, but to all readers, that every one send us some item. Describe something, in few or many plain words, if only on a postal card. When needed, give a few outline marks, figures, dimensions, etc., so that we can get at the gist of it. Never mind the grammar, the correct spelling, or fine writing; the Editors will put the matter in shape and clothe it in proper words. Some of the best things in our recent numbers have come from men who had no literary education, but they had practical ideas and skill, and in the rudest language and sketches they have furnished most valuable hints and suggestions that are useful to a very large number.

One thing more: Do this to-day and to-morrow—not put it off until next week or month, or to the leisure of winter. Send us along something *now*, and that will lead to other communications in the future. If in any case time and expense are required, we are always ready to pay for it, if the material is useful and is used, and the contributor desires remuneration.



The exposure, last month, of that remarkable corn, which came from "Bessarabia," by the way of Philadelphia and the Southern States, has called out some amusing letters. One correspondent in New Mexico finds that he has been paying 15 cents per ounce for corn that he can buy at home for 2½ cents per pound. A friend in Benzie Co., Mich., is very mirthful over the whole matter. As the Boyd's Batteries and the wonderful spectacles are sent out by those who deal in Bessarabia Corn, he proposes to combine the virtues of all in the corn, and issue a Johnny-cake that will produce the most wonderful effects, medicinally, and so act upon the eyes that people will see a great many things that they would prefer not to see, and will advertise it all in the "New York Agriculturist,"—if he can find it.

That "Common Sense Incubator"

is still inquired about. The circular professes to give directions for making an incubator, and gives detailed measurements in inches and parts of inches, with many rather obscure directions. It makes a great point of the use of saw-dust, but says nothing about the kind of saw-dust. If any one doubts that the use of pine saw-dust will kill the eggs, let them try it. That this circular of Bain is a fraud, it furnishes its own evidence. After showing, with apparent detail, how to build an "incubator," it says: "To those who have never used an Incubator, we would say that you can get full and explicit directions for managing it, which will tell you at what temperature to keep the eggs....when and how to turn them....also full and complete directions for making a Brooder or Artificial Mother....without which you can not raise them at all," and a great deal more. This wonderful book can be had for $2, and the advertising of this book, and of eggs of various breeds, seems to be the sole object of this "Incubator" circular.—Bain, you should be ashamed of it.

Gambling in Grain.

A concern in Chicago sends out a very attractive circular to farmers, which proposes to those who receive it to enter into speculative operations with the firm. Gambling of all kinds, whether in grain, in stocks, or at cards, is something that farmers should let alone. They may be sure that propositions like those made in this circular can bring them no profit. They have in Texas this saying: "Never play at a game that you do not understand,"—a saying that farmers may bear in mind when asked to take a part in doubtful schemes.

Cutlery, Silverware, Watches, Etc.

Those who receive circulars offering wonderful inducements to engage in the sale of these, should recollect that no special favors are shown in business. An article, whatever it may be, sells at its real value; and if any concern or company professes to offer staudard articles at much less than the market price, they may be sure that the things offered are not what they are represented to be.

Poultry-Dust.

Dust is a good thing for poultry, and aids the fowls in getting rid of vermin. But in parts of Ohio there seems to be rather too much dust. Will our friends who have been taken in by the loud professions of certain poultry papers, of which, so far as we can learn, only one number has been published, give us their experience? As with those who, under cover of telling how to construct an incubator, advertise their books, so certain poultry papers in Ohio advertise certain secret processes. Let us have light on this question.

Medical Matters.

In former numbers we have noticed the fact that our budget of Humbug letters of inquiry frequently run in a particular line. This month the great majority of our letters of inquiry refer to medicines and doctors. No other form of humbuggery is so successful as this. People in general know so little of their own bodies and the diseases incident to them, that those quacks who most strongly assert their nostrums are sure of a hearing. Among our letters are several asking about a "Dispensary" in Buffalo, and inquiring if they can successfully treat patients "by correspondence." To such letters we can only give the general reply, that we do not know of a physician of any standing who would think of treating a patient without *seeing* him or her. We look upon all who profess to "prescribe by mail" as persons to be avoided, whatever their pretentions. A large share of the letters that come to us refer to matters which we do not care to discuss in full. One from a friend in Minnesota, inclosing a circular of

Old Dr. Culverwell's Radical Regenerator,

to which we can only answer, "DON'T." Don't fool your money away upon the various nostrums offered by this circular. In all troubles upon which this quackish circular treats, the imagination plays a large part, and magnifies them. To all like our Minnesota friend, we would say, go to the nearest reputable physican, and make him your confidant and adviser, in preference to any one advertising in a distant city, of whom you know nothing. It is safe to consider all such self-announced "Physicians" as quacks. Their references to cured persons are easily obtained. If you make inquiry of any of those referred to, ten to one they are myths, if not co-partners of the quack himself.

The "Pillow Inhaler."

Here is something which an inquiring friend at Mt. Vernon, O., asks what we know about it. Our knowledge is confined to that given in the circular which he sends. This claims to be a "rational way to medicate the night air, and thereby heal diseased lungs, and throat and air passages;" but as, after a great deal of talk, it fails to give any clue to the stuff used, or the "eminent doctor who wrote the formula of our prescription," we give our usual advice, to let every and all secret preparations alone, even if they are in a pillow.

Dr. Churchill's Restorative Remedies.

To those inquiring about them, we say, let them alone. The circular gives the melancholy picture of the fellow "before taking," and the cheerful picture of a fellow "after taking," and a vast amount of reading calculated to make a nervous person miserable. These "Churchill remedies" belong to the same class with the Inman humhug. They propose, very frankly, to tell how they are prepared, and while, unlike Inman's prescriptions, they call for well-known articles, the directions for their preparation are simply ahsurd. Indeed, the apparently learned instructions given with the prescriptions are laughable to those having any knowledge of such matters. But the Churchill fellows, knowing that no mortal man can fix the stuff, come to the rescue, and offer to do it all for *a price*, and this is the whole end and aim of their circular. Churchill's stuff has become a nuisance.

"World-wide Blessing to Womankind,"

is the advertised name of a certain contrivance, and the advertisers hetter look out. Their circular, though somewhat amhiguous, indicates what they mean—which is mischief. This notice is not intended to he at all ambiguous, when it advises them to stop that "syringe" business.

A Pernicious Proposal.

We have a most rascally circular, claiming to be issued by the "——— Corresponding Club." The blank may be filled hy the name of a Massachusetts town, but we are not doing that kind of advertising. The correspondence is to be "with a view to Mutual Improvement, Amusement, or Matrimony." The price is 25 cents, and the circular says that "in no other way can you get them (correspondents) so easily and with so little expense." The details, giving the rules of this club, are sufficient to make parents shudder at the thought that such a thing may come into the hands of their children. Worse yet, the circular offers to send for 25 cents a hook, "How to Write a Letter; a Complete Guide in Business, Friendship, or Courtship." This "——— Corresponding Club" may suddenly find itself in trouble some July morning.

The Electric Light.

Electricity is a wonderful agent. The men of science who have studied it most thoroughly make the fewest claims regarding it. But electricity is a grand thing with which to impose upon the people. We have had all sorts of useless toys called "Batteries," to be worn next to some part of the body. These claim to possess curative properties, and no douht some honest people think that they have. Those who have examined them know that they can have no more efficacy than a leather medal of the same size. There are so-called "Electric," "Magnetic," "Magneto-Electric," and "Galvanic" affairs in great variety, to be worn under the sole of the foot, or against a part of the body. Electricity has been quite thoroughly applied as a medical humbug. When electricity began to be used for illumination, we expected that the swindlers would find some way to turn this to their benefit. The bogus "Electric Lamp" has turned up, but in a miserable shape. In some of the manufacturing towns of New Jersey, the ageut of the "Edison, McCandless Electric Light Company" has appeared. He is described as "well dressed,"—whoever heard of a swindler who was not? The "well dressed agent" has a "powder," a remarkable powder, which has only to be put into the kerosene of an ordinary lamp, when forthwith said powder will convert the common lamp into an "Electric Light." Besides transforming the lamps in this manner, there were offers of gifts of furniture, which should have put people on their guard. It did not, and sundry persons in Newark and elsewhere have paid out their dollars for that "powder," which is worth nothing, and for promises of furniture, which, if possible, are worth still less. It was bad enough for these fellows to sell, some years ago, pinches of common salt, at a high price, to put into the lamps, to prevent the breaking of chimneys, but that a powder could he sold to convert a kerosene into an electric lamp, seems incredible.

Obtaining Money under False Pretenses.

Some of the journals in the western cities and towns have been badly bitten in taking advertisements from every one who could raise enough money to get a regular circular printed; we are glad to see that they are getting more cautious, and of late, instead of inquiries *after* they have published the advertisements, we have inquiries beforehand. The latest case of this kind is that

OF J. CUDNEY & CO.,

who claim to be "Advertising Agents" in Broadway, N. Y. J. C. & Co. send to a Wisconsin journal a remarkable advertisement of J. A. Vail, of Philadelphia. The biggest kind of the most bejewelled, and the solidest sort of hunting-cased, and everything else that can make a watch valuable, all for $19.63 (though the figure in one place is $19.65—but what are 2 cents in buying "A Solid Gold Watch, the Opportunity of a Life Time?") As we wished to do our Wisconsin friend a good turn, our steps first went toward the number on Broadway, given hy Cudney & Co. We went where they were, hut they were not there. Next our representative in Philadelphia sought the man with the watches—Mr. Vail. To say that

OUR EFFORTS WERE UN-A-VAIL-ING—

makes a miserable pun, but tells the truth—no Vail, no Cudney, no nothing. We advise our Wisconsin friend to get cash in hand before he prints the advertisement. Better still, we would suggest that such advertisements as this of Vail should not be published at any price. The great army of swindlers would be greatly diminished if all papers at a distance, especially those at the West, take example from our friend in Wisconsin.

Pensions.—The Fitzgeralds and The Fitzgeralds.

Our call in the May *Agriculturist* for information regarding the Fitzgeralds, has elicited replies from the Fitzgeralds, and from many parties who have dealt with the Fitzgeralds. Altogether, the information received to date is both spicy and of a character to interest, if not amuse, somebody. Meanwhile we keep the matter open for another month, that testimony may he received from still others, as regards their Pension transactions with the Fitzgeralds. Please forward your communications immediately, condensing the facts, and making them brief for publication.

Farming at the "Front."

Never before have there been so many people of all classes taking a strong, direct, personal interest in the agricultural situation and prospects. Business men, hankers, capitalists, stock brokers, merchants, mechanics, manufacturers, operatives, and day laborers even, are watching the daily bulletins and reports of the weather, with especial reference to how it is affecting the growing wheat, corn, and oats, and the further planting of corn. Never before have they seen so clearly that farming is the real hasis of all other business, and that upon it rests the prosperity of the country. They now comprehend the fact that it was the good crops of 1878, 1879 and 1880, from the export of which we received so many hundreds of millions of dollars from other lands, which changed the financial depressiou of 1873, and the years following, into a prosperous activity extending through all branches of trade and manufacture. Every extra bushel of wheat or corn, or pound of meat, cheese and butter that went to market helped turn the scale. The hundreds of millions of bushels of grain that came from the interior to the seaboard, gave profitahle employment to the railroads. These bought and used more cars, more iron, more steel, and the makers of these, from head director to the lowest laborer, received more wages and more constant employment, and they purchased more freely those articles that go to supply the necessities and comforts of every day life. This stimulated and increased the mercantile trade, and made heavier demands upon all kinds of manufactured commodities. The farmers who received the proceeds were ahle to reduce debts upon their farms; to buy more and better implements; to pay up their store debts, and to huy more freely from the merchants. The merchants and shop keepers were in turn able to pay up their debts to wholesale houses, hrokers in manufactures, and importers, and to huy larger stocks of goods for cash or on short credits. The carrying of these goods increased the transportation business, and stimulated the building of five to ten thousand miles of new railroads per year.

This brief glance at some leading points shows the great and far-reaching influence of prosperity to farmers. On the other hand, the unfavorable winter and spring and the summer drouths of 1881 cut down the surplus wheat and corn and meat and dairy products and cotton, may score millions in valuc. This of course diminished exports, and has started gold ahroad; it has decreased the ability of farmers, and all classes of workers, to buy goods and manufactures. The decliue in the demand for iron and steel, and the fall in prices, prevent the payment of the wages asked for, and there is now prevailing one of the greatest "strikes" ever kuown in this country, of laborers who demand higher pay to meet the increased cost of living, due in part to the advance in breadstuffs, consequent upon the lessened crops of last year. Is it auy wonder that this state of things has opened the eyes and enlightened the understanding of that half of the people who are not engaged in agriculture, and who have hitherto been inclined to look upon farming as of inferior importance, and suited for clodhoppers? Farmiug has come to the front, and it is going to stay there.

A Bushel, More or Less—Its Immense Influence on the Country.

There are now growing in this country, about Forty Million Acres of Wheat. A bushel, more or less, at harvest will make a difference of Eighty Million Bushels in the aggregate crop. At $1,25 per bushel, the value would be $100,000,000. That sum diffused through the country, three-quarters to the producing farmers, and one quarter to the railways, canals, lake and river shipping, and dealers—and from all these classes, passiug from hand to hand, to merchants for goods, to manufacturers for their products—from these to the workmen, and from these again to dealers in provisions, goods, etc., would he a wonderful stimulant to the entire business of the whole Country—au influence sufficient to turn the scale from prosperity to depression, or the reverse. But the above is for a single product. There are over Eighty Million Acres in Corn and Oats. A difference of a hushel more or less per acre in the yield of these, at an average of only 40 cents per hushel, counts up Sixty-four Million Dollars more. Then, of say Sixteen Million Acres in Cotton, the difference of only 50 lbs. per acre, more or less, at 10 cents per lb., counts up Eighty Million Dollars more. Passing over the Dairy products, an immense interest, the Potato, Barley, Rye and Tobacco products, we have in the previously named crops, a difference of Two Hundred and Sixty-four Million Dollars, from so small a change in the yield, as a single bushel of grain per acre. —And a single week of favorable or unfavorable weather throughout the couutry, between this time and the in-gathering of the crops, will easily make all the difference we have noted, and thus affect the interests of the whole Nation.

In this connection we may add, that, if the Government Weather Bureau can in the slightest degrce help the farming interests by early reports widely diffused, of the state of the weather, and the probabilities for a day or two in advance, and thus aid the cultivators of the soil in their plans and operations, Congress should not haggle a day or an hour over a few hundred thousand dollars appropriation to the Bureau to make it more efficient, while they vote away, without hesitation, tens of millions to clearing out diminutive mud creeks, and the erection of costly public structures where their chief use is to put money into the pockets of "constituents."

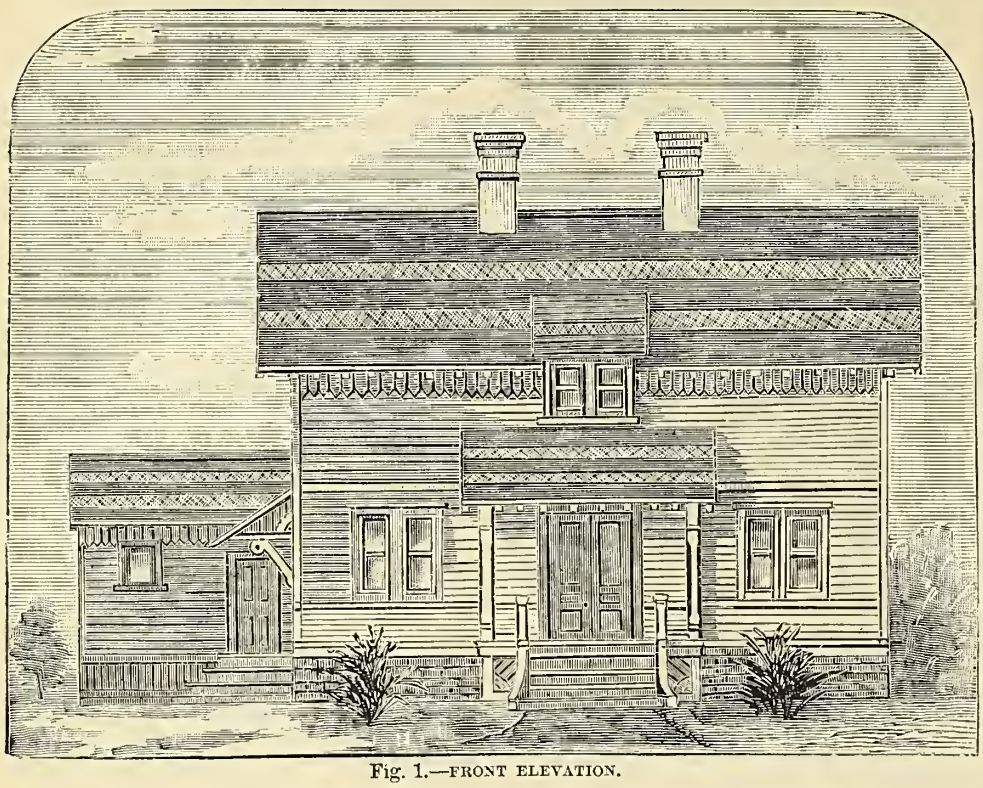


Fig. 1.—FRONT ELEVATION.

Country House, Costing $1,750 to $2.000.

(Cost, as here Described, $1,969.)

CLASS II.—2nd PRIZE.—BY C. R. CRABB, COXSACKIE, N. Y.

The Judges, in making the award to this plan, say: "A very good plan in many of its features, notably in arranging a large kitchen, which is the great workshop of the house, and having it roomy, central, and with convenient appointments. Two or three changes, however, would be decided improvements we think, as for example: (1.) A rear entrance to the Kitchen could be easily made with small expense, and it would both save steps, and the carrying of various articles in and out through the 'stoop' door, which is exposed to view from the street. (2.) Re-arrange Pantry and adjacent closets,to have a direct passage from kitchen to fuel-room, instead of going through two 'entry' doors. There is here the same objection as noted in the plan given in May, viz., that the bath-room cannot be used by occupants of the second story, except by passing through the Kitchen or Sitting Room, and then through the bed-room, when it may be occupied by persons sleeping there or by an invalid. A bath-room should always be placed where it can be freely entered by all the occupants of a house, without disturbing any one else; and also so as to be warmed in cold weather.—We now give

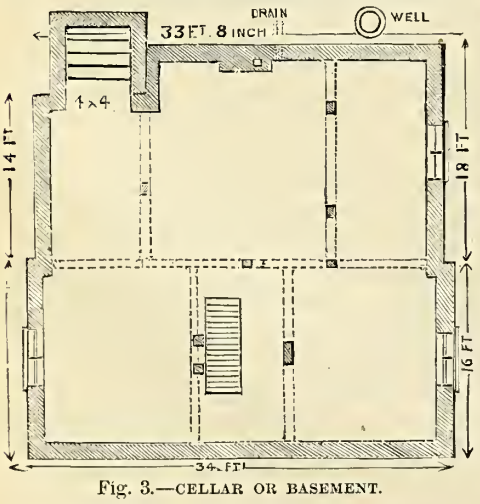


Fig. 3.—CELLAR OR BASEMENT.

the descriptive text, or "specifications," sent by Mr. Crabb, with such condensations and suggestions as seem desirable. (These specifications not only describe the materials and kind of work, but also serve as a basis for giving out the work by contract. In a written contract, some additional items may well be stated, as the kind of blinds, quality of lead to be used in the Tank, etc., etc. The book, "House Plans for Everybody" supplies

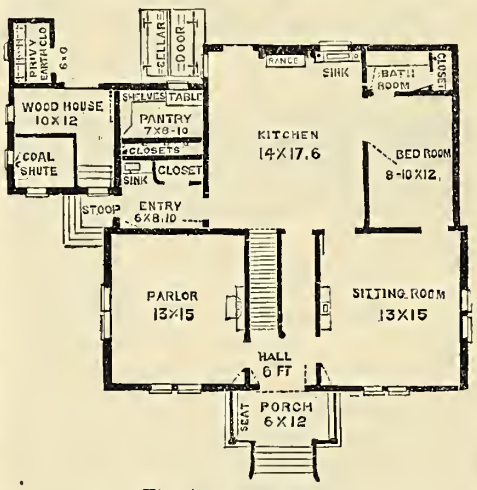


Fig. 4.—FIRST STORY.

many suggestions which will be very useful to any one about to construct a house, large or small):

Mason's Specifications. — Excavate for Cellar under entire house, and for footing stones under Veranda, Woodhouse, and Privy; also for drain and cesspool. (If water can be found near, dig a well deep enough for a constant supply of water,"about 6 feet from foundation, in rear of Kitchen; stone it up 2½ feet in diameter in the clear.—**Foundation** walls to be 18 inches thick, and of good building stone, started in trenches 4 to 6 inches, according to the soil, below the cellar bottom, on base stones, if obtainable, wide enough to reach across the wall. Lay to line both sides, 3 feet high in cement mortar, and the remaining 3 feet 8 inches, in lime mortar. Lay up cellar-way with stone in cement mortar. Steps to be of cut stone, 12 inches wide, 3 inches thick, and 5 feet long. Use brick for risers. [Where stone is not accessible and cheaper than brick, the latter may be used for cellar walls, etc.—ED.] Build six *piers* of brick, 12 by 12 inches, where they are shown (fig. 3), each capped with a stone the size of pier. Build a double pier for Sitting Room chimney.—Start the Kitchen chimney from the cellar bottom, to have one flue from cellar, also a flue from Kitchen fire-place, built for a No. 9 Range. Use a 4 by 8-inch stone lintel, and slate hearth bedded and set in cement. Put a 6-inch tube in ventilating flue 4 inches above second story ceiling timbers, and all necessary tubes in draft flue.—Build Parlor chimney from cellar bottom with single flue. Make fire-place for a common iron grate, for wood or coal.—Start Sitting Room chimney on piers, carrying up single flue. Put in all necessary tubes and covers. Top out in cement mortar, and as shown on Elevations. All piers and chimneys to be started on large stone bedded in cement. Lath walls and ceilings, and also a space overhead in cellar, large enough to cover a swing-shelf, with hemlock lath, breaking joints every sixth. Put on a heavy scratch coat with mortar, well haired, and at least a week old. Hard finish ceilings on scratch coat (broom scratch), in best manner with Plaster Paris, white sand and lime. Finish walls for paper with a brown coat of mortar and lime, skim troweled down hard.—Set a plain marbelized slate mantel in Parlor, and do necessary mason work in setting kitchen range. Lay the cellar drain with brick tile, and sink drain with 3-inch glazed tile, making joints perfect with cement, and scrape it smooth on inside. Tile to be laid on a 6-inch hemlock board, brought to a true and even grade. If the ground slopes well away from the house, make a shallow cesspool with stone, laid dry, extending and putting it not less than 200 feet from the well. If nearly level, build it of brick, well cemented inside. Cover with large flag-stone, leaving a man-hole 22 inches in diameter. Make the cesspool 6 feet by 6 feet, and 8 feet deep. Set large flat stones below posts under Veranda, Woodhouse, and Privy, each to have a place cut on upper face, to set an iron rod.—Leave house broom-clean, removing mason's materials and rubbish, and leaving mason work complete and finished.

Carpenter's Specifications. — First Story to be 8 feet 6 inches in the clear, and Second Story, 8 feet in clear. Posts 16 feet from top of sill to top of plate ceilings of upper room, to finish 10 inches on rafter.—Sills for house, 6 by 8 inches; for Wood-house, 6 by 6 inches; for Veranda, 4 by 6 inches.—Studding next to openings, 3 by 4 inches; intermediates, 2 by 4 inches. Corner posts, 4 by 6 inches. Plates, doubled, 2 by 4 inches. Rafters, 2 by 6 inches, 2 feet to center. Collar beams, 2 by 6 inches.—First Story floor timber, 3 by 8 inches, 20 inches to center. Second Story floor timber, 2 by 8 inches, set 16 inches to centers. Rafters and floor timbers to be Spruce, the balance of the frame to be sound hemlock.—Frame the sills together with mortise and tenon, using 6 by 8-inch cross-sills under partitions, as shown, set on edge. Frame in lower floor timbers flush with top of sill. Every other floor beam in Second Story, under tank, to be 6 by 8 inches; cap of partition, under tank to be extra heavy, studded up with 2½ by 4 inches, 12 inches to centers. Studding in outside wall to be 3 by 4 inches, set 16 inches to center, where weight of tank comes. Plane and cut the ends of rafters

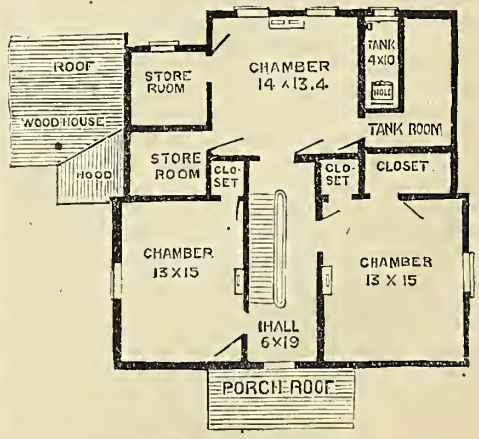


Fig. 5.—SECOND STORY.

to pattern, as in figure 7, allowing them to project 20 inches over plate.—Sheath the frame with hemlock boards, well fastened on with tenpenny nails,

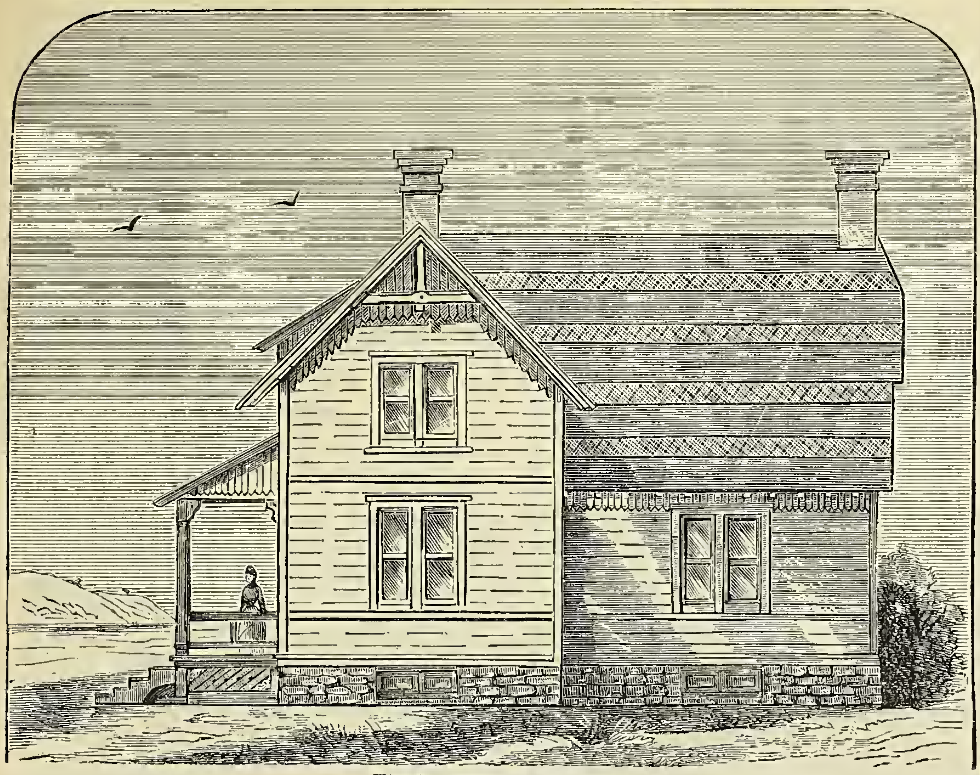


Fig. 2.—SIDE ELEVATION.

put on diagonally in gahle ends. Roof, board with 1¼-inch matched pine plank, laid smooth side down, as far out as the roof projects, covering halance with 6-inch hemlock hoards, or shingling strips; put in fourteen inch tin valleys, painted both sides, and shingle in the tin gutters, as in figure 8, and paint both sides of the tin. Straps across the gutters should be ahout 2 feet apart. Put in a line of gutters, graded to and a little above the tank. Use a 2-inch leader, put through roof, and within 5 inches of hottom of tank. Place the other gutter as near the edge of the roof as practicable. Put on leaders of proper size, to conduct water to tank and ground.—All shingles to he best sawed pine, 18 inches long, laid 5½ inches to the weather. Water-table to be 6 inches wide, 1¼-inch rahbeted. Corner hoards to be 1¼ inch thick, and show 4 inches wide. All helts to be 1¼ inch thick, rahbeted for clap-hoards.—Make window frames as shown, with plain drip caps, 1¼-inch casings, 1¼-inch jambs, and 2-inch suh-sills. Cut pockets, and put in axle pullies for weights. The sash in mullion windows of First Story, for glass, 18 hy 30 inches, 2-light. In Second Story, 18 by 28 inches, sash, 1½-inch. The single frame windows of First Story to have sash 13 hy 30 inches, 4-light; and for Second Story, 13 hy 28 inches, 4-light. All to be glazed with best quality French sheet-glass. Make other windows as shown on plans and elevation. Prime paint the frames and corner boards before setting. Cover all sheathing with hest resin-sized building paper, giving good lap, and have it extend well under all frames, casings, etc. Cover with ½-inch bevel edge pine siding, 5½ inches wide, to lap not less than ¾ inch, and nailed with sixpenny nails. All outside pine to be free from splits, sap, and loose knots.—Put Wood-house sills 6 inches from the graded ground, on inch iron rods, to have thread and nut on upper end to adjust sills; lower end to rest on stone set helow frost. Roof and frame same as main. Side of Wood-house may be covered with 6-inch "Novelty Siding," instead of the bevel edge pine siding. Build Privy the same. Build hood over kitchen door, as shown (fig. 5). Make platform stoop, set on rods, with outside steps on two sides; plank for steps, 1¼ inch; for risers, ⅞ inch thick. Set front porch on iron rods. Floor to be narrow 1¼-inch matched pine, driven up in paint. Steps, 1½ inch thick, and risers, ⅞ inch. Put up rail and seats where shown. Rafters, 2 by 5 inches, spruce, planed and cut to pattern. Roof boarded with matched pine plank, smooth side down. In shingling the roof, cut the two middle courses to pattern. Put on brackets, and do all ornamental work as shown.—Cover cellar-way with a pair of flap-doors, made of 1¼-inch matched pine plank, with proper hinges, etc.—All the windows to have out-

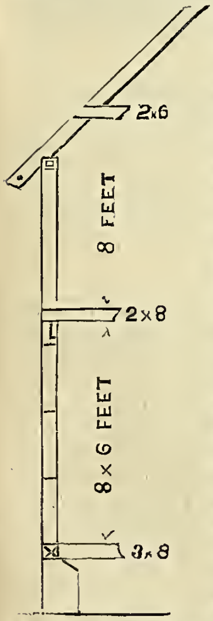


Fig. 6.—THE FRAMING.

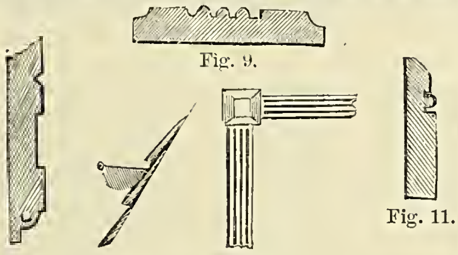


Fig. 9. Fig. 7. Fig. 8. Fig. 10. Fig. 11.

side hlinds, except those in cellar. Bridge all floor timbers, one row through each span, with 1½ by 2-inch spruce strips. Use 1¼inch matched pine-plank, 6 inches wide, for flooring, selecting the best for the Kitchen, Pantry, and Bath Room. Set partition of 2 hy 4 studding, 16 inches to centers, and doubled at openings. Make angles solid with blocks, spiked in.—Build Stairs as shown, with 1¼-inch plank treads, and ⅞-inch risers, blocked and glued. Put up a 4-inch black walnut rail, 2-inch black walnut turned balusters, and 8-inch turned black walnut newel. House to he cased on first or scratch coat. All inside pine to he clear. Door and window casings 5 inches wide, ⅞-inch thick, with a cove on each edge, and three scratch heads run through the center, as in figure 9; these to be cut against corner hlocks, 5½ by 5½ hy 1¼ inches, fig. 10. Use base blocks for door, 5½ inches wide, 8½ inches high, 1¼ inch thick. Base-hoards of first floor, 8 inches wide; second floor, 6 inches. Bevel off top edge, and run on head, as in figure 11. Front doors to be each 2 inches thick, 2 feet 3 inches wide, and 7 feet 6 inches high; to have ground glass in upper panel. Furnish with flush holts, lock, and Kahala bronze trimmings; also a good lever-bell, to cost $2.50. All doors on first floor to be four-panel, molded both sides, and 1½ inch thick; white porcelain trimmings; mortise locks, and hard-wood thresholds. Second floor to have four-panel "O G" door, 1½-inch thick, mortise locks, brown trimmings, pine thresholds. Put plain wood mantel in each chamber, and a neat hard-wood mantel in Sitting Room. Fit up closets with shelves, and a set of hooks, 9 inches apart, on two sides. Build a Tank in attic, of good 2-inch pine plank, 4 feet wide, 10 feet long, inside measure, and as high as the roof will permit, to he properly timbered and braced. Put ½-inch iron-rod across the top at center; cover top with ⅞-inch matched boards, leaving a man-hole with cover. Make a ventilating tube of pine boards 6 hy 6 inches, running from top of tank to top side of collar heams. Connect it with ventilating flue of chimney with a piece of 5-inch stove-pipe. Have the leader from gutter made loose joints, so that it can be taken off, and the tube plugged when no water is wanted in the tank. Make scuttle and cover in ceiling of chamber over Kitchen.—Wainscoat Kitchen, Entry and Bath Room, 3 feet high, with narrow matched and beaded pine, ⅝ inch thick; cap with nosing, and cover.—Ceil up sink, with door under, and put up splash-board 16 inches high.—Fit up Pantry with table, as shown, with drawers under; a set of closets with doors along one side, with closets for flour barrels under, and a set of open shelves. Build a closet in entry of matched pine hoards, 3 by 5 feet. Put up row of hooks. Fit and properly hang hatten door to the same.—Build a wood sink where shown, 20 by 30 inches wide, by 5 inches deep. Ceil up under, making a closet with door. Put up board at right hand of sink for water-pail. Case up bath-tub with pine, putting up proper cant-boards, etc. Build steps from stoop down in wood-house. Make coal-bin, where shown, of hemlock boards, to hold 6 tons of coal. Make window and shute of proper hight to shovel in coal from wagon. The back door of wood-house to be of 1¼-inch matched pine, and 3 feet wide, properly hung, with a bolt to fasten from inside.—Fit up Privy with 1¼-inch counter top, to have hinged covers.—Build reservoir in top for dry earth, part of which may extend in wood-house. Place window so that earth can be shovelled in from a wagon.—Make a tight box, with hard-wood runners, and stout ring and staple in end, to receive droppings, so that this can be drawn away and emptied when necessary. Put up a swing-shelf in cellar. Do all necessary carpenter work to carry out and complete the design of the entire huilding.

Plumber's Specifications.—Put up in Kitchen a thirty-gallon galvanized iron boiler, set high enough to clear the sink. Furnish iron sink, 20 by 30 inches. Furnish a 6-foot bath-tuh, of 12-ounce sheet-copper, well tinned. Line tank in attic with lead. Put a 3-inch lead waste-pipe in tank, and connect it with the leader at corner of house. Connect tank with boiler through ¾-inch "B" lead-pipe, to supply sink and hath-tub with hot and cold water, through ⅝-inch "B" lead-pipe. Put in 1½-inch waste-pipe for sink, trapped, and 1¼-inch waste-pipe for bath-tub. The latter may connect with sink waste-pipe ahove the trap. Properly connect waste-pipes with the drain.—Connect boiler with water-back of Range. Put a 1¼-inch lead waste-pipe in sink in Entry, to go through wall and discharge on the ground; no service-pipe required for this sink. Put up in the Kitchen, at right hand of sink, a No. 2 "Union Pump," or its equivalent; connect it with the well by a 1¼-inch galvanized iron pipe. [An important matter is not stated. The pump to be "suction" and "force" with strong pipe up to tank, and "tell-tale pipe" down to sink—to fill tank from the well (or from cistern) when roof supply fails.—EDS.]

Painter's Specifications.—Prime outside of house and the blinds with white lead, oil, and yellow ochre. Cover this with one coat hest white lead and oil. Paint in colors to suit the owner. Paint all inside work two coats, using hest materials, and in tints to suit those concerned.

Shellac knots, and putty all nail-holes and splits. Oil and shellac the newel, post, rail, and halusters.

Estimate of Work, Materials, Etc.

Digging Cellar and Drain	$30.00
Well, complete	30.00
52 Yards Stone Work, @ $2.25	117.00
16,000 Brick for Chimneys and Piers, @ $10.00, laid	100.00
Drain, $32.00; Stone Cesspool, $14.00	46.00
576 Yards Lath and Plaster, @ 25 cents	144.00
Stone Steps	3.00
Slate Mantel and Grate	28.00
	$498.00

Hemlock Timber.

Sills, 6 by 8 in. 238 feet in length	952 ft.
2 Sills, Tank, 6 by 8 in. by 18 ft. long	144 ft.
25 Collar Beams, 2 by 6 in. by 14 ft. long	350 ft.
7 Posts, 4 by 6 in. by 16 ft. long	224 ft.
6 Wood-house Sills, 4 by 6 in. by 13 ft lg.	136 ft.
80 Studs, 2 by 4 in. by 16 ft. long	887 ft.
20 Studs, 3 by 4 in. by 16 ft. long	320 ft.
18 Rafters on Kitch'n, 2 by 6 in. by 12 ft.	216 ft.
	3,229 ft., @ $17.00, 54.89
150 Wall Strips, 13 ft. long, @ 14 cents	21.00
50 Jolsts, 2½ by 4 in., 13 ft. long, @ 18 cents	9.00
150 Roof Boards, 6 in., 13 ft lg, (hem'k culls), @ 8 cts.	12.00
225 Sheathing, 10 inches wide, 13 ft. long, at 15 cents	33.75

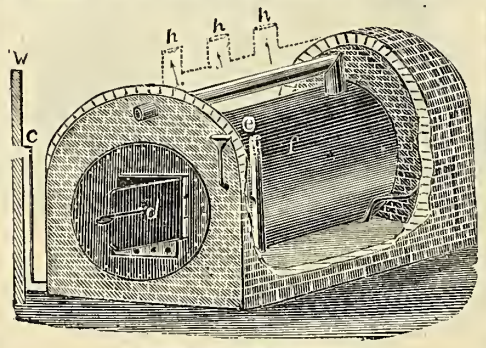
Spruce Timber.

34 Floor Timbers, 3 by 8 in. by 16 ft. lg.	1,088 ft.
40 Floor Timbers, 2 by 8 in. by 16 ft. lg.	840 ft.
40 Rafters, 2 by 6 in. by 14 ft. long	560 ft.
	2,488 ft., @ $22.00, 54.74
18,000 Best Pine Shingles, @ $4.75	85.50
160 lbs. Sheathing Paper, @ 5 cents	8.00
600 ft. 1¼-inch Pine, for Frames and Casings, @ 4 cts.	24.00
400 ft. 1¼-inch Inside Frames and Casings, @ 4 cts.	16.00
2,500 ft. Clap-boards, @ $24.00 per M	60.00
86 "Novelty Siding," 6 inches wide, @ 16 cents	12.76
320 Matched Pine Planks, 1¼ by 6½ in., @ 20 cts. each.	64.00
Stairs, Rail, and Newel, complete	38.00
1,000 ft. ⅞-inch Pine, for Casings, @ 4½ cents	45.00
430 ft. Narrow Beaded Ceiling, ½-inch, @ 4 cents	17.20
500 ft. 10-inch Matched Pine, @ 3 cents	15.00
450 ft. 2-inch Plank, @ 4 cents	18.00
50 ft. Cherry Thresholds, @ 5 cents	2.50
40 ft. Ash for Mantels, @ 5 cents	2.00
300 ft. Shelving, @ 3 cents	9.00
10 Pairs Sashes, 2-Light, 18 by 30 by 1½ in., @ $1.60	16 00
4 Pairs Sashes, 2-Light, 13 by 28 by 1½ in., @ $1.50	6.00
2 Pairs Sashes, 2-Light, 18 by 24 by 1½ in., @ $1.40	2.80
3 Pairs Sashes, 4-Light, 13 by 30 by 1½ in., @ $2.00	6.00
2 Pairs Sashes, 4-Light, 13 by 28 by 1½ in., @ $1.80	3.60
6 Pairs Cellar Sashes, @ 50 cents	3.00
Blinds for all, except Cellar Windows	26.00
1 Pair Front Doors, 4 ft. 6 in. by 7 ft. 6 in. by 2 in.	8.00
9 Doors, 2 ft. 8 in. by 6 ft. 10 in. by 1½ in., at $2.25	20.25
1 Door, 2 ft. 6 in. by 6 ft. 10 in. by 1½ in.	2.00
3 Doors, 2 ft. 6 in. by 6. ft. 6 in., at $1.75	5.25
8 Closet Doors, @ $1.25	10.00
Pantry Doors	6.40
1 Door, 2 ft. 10 in. by 6 ft. 10 in.	2.40
All Hardware	110.00
Plumbing, $146.00; Painting, $85.00	231.00
Carpenter Labor, not included above	350.00
Range, $35.00; Cartage, $25.00	60.00
Total Cost	$1,969.04

Wood-Burning Heating Furnace.

In the Prize House Plan given in the *American Agriculturist* of May last, pages 194-5, from Mrs. W. H. Burr, of Redding Ridge, Conn, she partially described what she called the "Farmer's Furnace," in which 4-feet lengths of wood, of large size and knotty, are burned, and which has given excellent results. This has called forth a great numher of letters of inquiry, and in response to our request Mr. Burr kindly constructed and brought us a model, on the scale of 1 inch to a foot, from which engravings and descriptions are given herewith: The Heater, *f*, is made of Boiler Iron, one-quarter inch thick, and firmly riveted at all joiniugs. It is 6 feet long, and 3 feet in diameter, with door, *d*, 18 inches square. The front end, or head of the heater, is of cast iron, 1½ inch thick, and the door is also cast iron. Below the door is a sliding plate, with three-quarter-inch holes, matchiug corresponding holes in the end plate of the furnace, so that by moving this slide when the door is closed, the air admitted can be reduced to any amount desired, and the fire he thus under complete control.—The smoke chimney, 9 inches iu diameter, rises from the interior end with au elhow, and is brought out in front, where an ordinary stove-pipe is attached, and extended to the chimney. As this pipe is inaccessible for repairs, save by removing the brick-work, it is made of strong one-eighth-inch iron plate, well riveted. The front end of the furnace is supported by the hrick wall, and the rear end by a flat bar of iron, 4 inches wide, and half an inch thick, bent to fit the hottom of the furnace, its ends heing supported hy the brick-work. An upright strong iron tuhe, *e*, 4 inches in diameter, is attached to the side of the furnace. It is closed at the bottom, and open at the top. This is for holding water, to be evaporated into the warm air to moisten it. (A good supply of moisture is important in *all* heating furnaces, as we have frequently explained, and we suggest that this *evaporator* have an open surface of at least 100 square inches—of any form, instead of round, say 8 by 12, or 6 by 16, or 5 hy 20 inches.) An inch pipe extends from this through the front wall, terminating in a funnel, for pouring in water. The top of the funnel must he no higher than the top of the evaporator, and the hight of water in the funnel tube will show the state of the supply inside. This evaporator heing inaccessihle, and liable to rust, should be of hoiler iron, or it may be of cast iron.

The furnace is surrounded with a tight hrick wall arched over, with as many openings, *h*, *h*, *h*, as are desired for the tin air-pipes which convey the warm air to different rooms. The inclosing walls should he at least a foot thick, or better 15 or 18 inches, to prevent any escape of heat into the cellar. They ahsorh a good deal of heat and give it out slowly long after the fire has gone down in the furnace. For economy the end and side walls may be built of stone if this is plentiful; bricks will be needed for turning the arch, in which they may he set end down, and thickened by additional layers over them. In the engraving a part of the wall and arch is omitted to exhibit the furnace in the interior.



A VIEW OF THE FURNACE.

We suggest that in building the wall, a door, say 2 feet wide and 3 feet high, be left in the front side with an arch or heavy iron har, or strong flat stones, over it. This door can be filled in with hrick or stone, which can be taken out without disturbing the rest of the wall, should there ever be occasion to enter the interior, as there will quitc likely to he, in after years. A solid foundation must he provided to support the weight, and the interior and exterior flooring is covered with a heavy coat of cement or concretc, with smooth surface. Cold air is admitted through a hroad hox pipe, of which the edge is shown at *C*, which opens outside the house through the cellar wall, *W*, the outer opening being protected by a wire screen nailed over it. This cold air box is made of inch boards, its interior say 15 to 20 inches by 5 or 6 inches. It enters about the middle of the side wall and extends under the center of the furnace so that the cool air will rise uniformly around it. A sliding cut-off board should be inserted in this cold air hox for conveniently shutting off too much cold air when a driving wind strikes directly upon that side of the house. The enclosing wall and arch should he large enough to leave an open space of 12 to 18 inches at the sides and at the rear end of the Heater and ahove the smoke pipe. In the model before us, the interior is about 7 feet long, 6 feet wide, 6½ feet high. The tin heat-carrying pipes should he of ample size, equivalent to 10 or 12 inches diameter for the first story rooms, and 7 to 9 iuches for the upper rooms, to which the draft is stronger. If all were of the same size the upper rooms would take most of the heat. This, however, can also he regulated, and should he, hy having dampers in the pipes near the furnace, so as to shut off the heat or lessen it for any rooms, as desired, though the registers in the rooms, if closing tightly, will regulate the entrance of warm air. The tin pipes can be of any form desired, round, square, or otherwise. They are hest put in when constructing the house, as they can then be carried up through the partition walls. But great care is always needed to keep them well protected from contact with wood. When warm-air or smoke pipes are carried up through plastered walls, fasten them firmly at a distance of 3 inches from the studding on each side; and instead of wood lath, put iron lath on hoth sides. These are strips of common sheet iron, 2 or 3 inches wide, long enough to be nailed to the studding at each of their ends, and with their edges curved over sufficiently so to hold the mortar.

The cost of the main furnace Mr. Burr reports as $50, two years ago, and of the whole (furnace, enclosing wall, smoke and air pipes, registers, etc., for the whole house) as a little under $150.—At present prices, the cost would he considerahly increased. But such a furnace is desirable, even at a much greater cost. It saves fuel, and risk of fire if the air-pipes be properly put in; it saves trouble, the litter and dust of stoves and fire places; and a flow of warmed fresh air from out-doors, if properly supplied with moisture, is greatly conducive to health.

Seeding on Sod.

We have been experimenting, from force of circumstances, in seeding on sod the present spring, and infer from present developments, May 20th, the date of this writing, that it is entirely practicable to get a fair catch of clover and grass seed on neglected pastures and meadows without plowing. The seed sown was red and white clover, herd's-grass, and red-top, mixed. The land experimented with was an old meadow, naturally moist, springy, with water upon the surface, in spots, during winter and spring, neglected for a dozen years or more, grass cut and carted off, and nothing returned—brakes and weeds more plenty than grass on all parts of it. The sowing commenced early in April and continued until the middle of May. On small patches a mixture of wood and coal ashes was spread, and the ground raked over. Here the catch is good, and the young clover and grass is promising. On other patches loam was spread and the ground raked over, and the seeds have started well. There were bare patches under the walls, where leaves had rotted for years, and in this leaf-mold the catch was all that could he desired. In another patch, several loads of spent tan-hark that had been rotting for ten years was spread, and the ground raked over. The seed did not come so quickly in this, but there is quite enough, if it lives, to make a good sod. On the larger part of the meadow there was no top-dressing, and the seed had no protection but the very thin growth of grass and weeds, just starting. The catch is not so good here of course as in the dressed patches, hut is better than could have heen expected. Of course the better way of seeding is to plow, manure, harrow, and bush, but all this takes time and costs a good deal of money. If we can get a good catch of clover upon neglected meadows and pastures, we can put them upon a course of improvement at small expense. Wherever the clover plant will grow, it will enrich the soil, and prepare the way for grains and grasses. It would have been better to sow the grass and clover seed in March upon the snow; but as it is, the experiment is quite satisfactory.

Ten Years' Gain in Population.—The relative gain in population hy the different States, from 1870 to 1880, is shown by the following figures of percentage, calculated from the Census Reports. The "Westward march of Empire" is well seen in comparing the northern New England States with those west of the Missouri River. Vermont gained little more than half of one per cent during the ten years; that is to say, for each 190 inhahitants in 1870, there were 191 in 1880; while in Nehraska, for every 190 inhabitants in 1870, there were 699 in 1880—a gain of 268 per cent. The total population of the several States in 1870 and 1880, is given in the *American Agriculturist* for February last.—The following are the percentages of gain in the different States hetween 1870 and 1880:

Increase Per Cent.

Colorado	387	S. Carolina	41	Missouri	26
Nebraska	268	W Virginia	40	N. Jersey	25
Kansas	173	Michigan	38	Kentucky	25
Texas	94	Mississippi	37	Wisconsin	25
Oregon	92	Iowa	36	Tennessee	23
Minnesota	78	Georgia	30	Virginia	23
Arkansas	66	N. Carolina	30	Massachu's	22
California	54	Louisiana	29	Pennsylv'a	22
Nevada	47	Alabama	27	Illinois	21
Florida	43	R. Island	27	Maryland	20
				Ohio	20
				Indiana	18
				Delaware	17
				Connectic't	16
				New York	16
				N. Hamps'e	9
				Maine	4
				Vermont	½
				In the whole country	30

Prairie Chickens.

BY JOHN MORTIMER MURPHY.

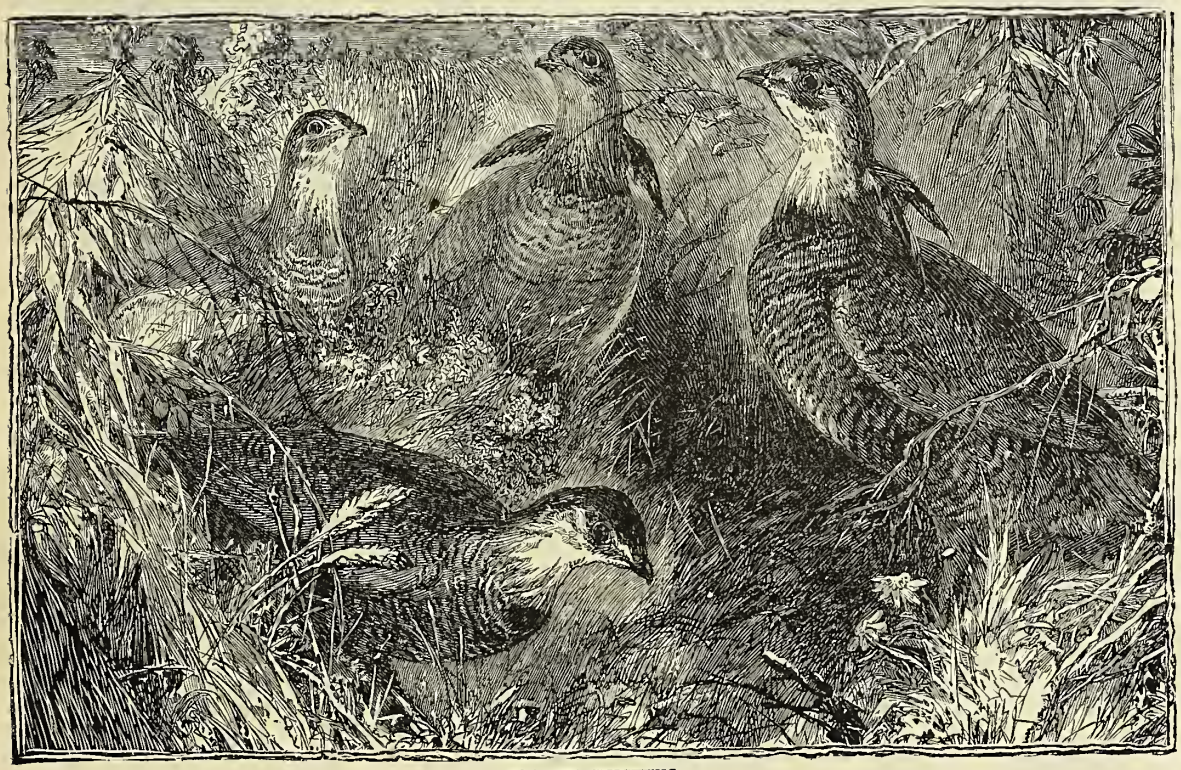
By the middle of this month (July), thousands of the readers of the *American Agriculturist* residing in the Western States, will be getting their fowling pieces ready for Prairie Chicken Shooting, the law being up in most of the States and Territories in August. The Prairie Chicken is regarded by many as a bird of superior flavor and delicacy. Its general color is blackish-brown, varied with tawny; the throat is buff, and the vent and under tail-coverts are white. It carries the well-known distensible sacs on each side of the neck, and the little wings or tufts which have given it the specific name it bears.

When the males are soliciting the company of the opposite sex in the spring, they inflate these sacs to the size of a small orange, expand the winglets, spread and erect the tail, and commence booming, or tooting, long before daybreak, and continue it until sunset in places where they are numerous; but where they are hunted much, they are seldom heard after sunrise. They are always pugnacious, but unusually so at this period; hence, if two meet, they indulge in fierce battles, which terminate only by the flight or death of one of them. When they are "calling," the air reservoirs, which are alternately filled and emptied, produce sounds not unlike the roll of a muffled drum. This roll can be heard a mile away in calm weather; but if the skin is punctured it ceases to be resonant. As soon as the love season is over, the hens leave the males and build their nests of grass and leaves in the open prairie or under the shelter of a bush. The number of eggs laid by each varies from ten to sixteen; these are a light-brownish color, irregularly spotted with black. If the first eggs are destroyed, another set is laid, but if not, only one brood is raised in a season.

When the young appear, the mother displays the greatest solicitude for their welfare, and keeps steadily calling to them whenever they manifest a disposition to stray from her side. If a man approaches them she ruffles up her feathers and assumes a combative attitude, but she seldom flies at him, preferring to lead him away from them by various artifices. She warns the brood of danger by a single loud cluck, and the moment they hear it they disperse in every direction, and squat so close to the ground, in the tall grass or grain, that it is almost impossible to detect them without the aid of a dog. They remain in cover until the mother announces that the danger is over and calls them to her side.

They are so fully developed by the fifteenth of August, although only hatched in June, that they afford excellent sport, as they are strong on the wing, and their flight, though regular, is rather swift. Being fast runners, they generally try to escape on foot before they attempt to use their pinions. The young males are so exceedingly combative, that members of the same brood indulge in contests in the autumn, but these are generally suppressed by the mother before they lead to bloodshed.

Audubon says that the males which he had domesticated were conspicuous for their courage, and would even fight the turkeys and dunghill cocks rather than yield their ground. They were more pugnacious in spring than at any other time, and strutted, tooted, and fought each other as they do in the wild state. He found the birds of both sexes readily amenable to domestication, for he had sixty in his garden at one time, and they became so tame during the winter that they would feed from his hand. These bred in confinement, but the broods were so destructive to vegetation that he was compelled to kill them.



PRAIRIE CHICKENS.

Pinnated Grouse are so abundant in portions of the West, that it is nothing unusual for a person armed with a breech-loading gun to bag from twenty to thirty brace in a day, but as they increase in numbers wherever civilized man settles, there is no danger that they will become scarce for many years to come, as they find an abundance of food in the numerous insects that live on the prairie, and the grain left in the stubble fields. They are said to follow man wherever he goes, the proof of this being furnished by their presence in several cultivated regions beyond the Rocky Mountains where they were unknown a few years ago. They have now been traced as far westward as Nevada, and will, no doubt, soon be found beyond the Sierra Nevada, in California. The western sportsmen have a saying that the Pinnated Grouse follows the railroad, whereas the Sharp-tail flees before it, and they infer from this that the former can thrive in the vicinity of man, but that the latter cannot. Several experiments which have been made, prove that it is readily susceptible to domestication, and that, in contradistinction to the usual habits of its family, it will not only pair but breed in confinement. Another great advantage it possesses over its kindred is, that it is not very migratory, and manifests no desire to leave the vicinity of the barnyard if it obtains plenty of its favorite food, and an opportunity of taking an occasional run in the grass. Its domestication would evidently prove profitable, as it is very prolific, weighs from two to nearly three pounds, and has rich and succulent flesh. One curious fact about the flesh is, that it often turns dark after a few frosty nights, and loses much of its pleasant flavor. Those who are epicurian in taste do not like it so well then as in the earlier portion of the season, so it may be said to be in prime condition only between the fifteenth of August and the first or middle of October. The shooting season really closes about the first of November, for after that time the birds become so wild that they will not lie well to the dogs; but persons who wish to try their skill at long ranges will find this and the following month best for their purpose, provided they do not care for long tramping and a small bag. When the shooting is about over the trapping commences, for as soon as the snow causes the birds to seek the woods for shelter and the cornfields for food, vast numbers are trapped by means of every known device, and forwarded to the Atlantic States and Europe. This method of capture is made easy by the habit the creatures have of uniting in large packs as soon as the weather becomes frosty, and of travelling together, even into the snares set for them. The general habits of the Prairie Chickens are now so well known that experienced sportsmen know where to seek for them at any time of the day or year. They are found in stubble fields and patches of flax and beans during the morning in the early part of the season, or on ridges and hillocks where the grass is short; but about ten o'clock, when the sun begins to get hot, they retire to the long grass and lie there until four or five o'clock P. M., when they resort to the fields again for food. They are sure to be found on the lee of a ridge if the wind blows strongly, and near the margins of sloughs in the evening. The cornfields are favorable retreats during the middle of the day, as the long stalks protect them from the glare of the sun, and the ground is loose enough to enable them to enjoy their dust bath, which is their panacea for parasites. Dogs find it very difficult to work them up in such localities, owing to their habit of skulking and the dryness of the earth. The sportsman also learns in a short time that he cannot make a large bag in tall corn, as he must depend entirely on snap shots, and he cannot mark them down when they alight after being flushed.

The most experienced sportsmen rest during the heat of the day, and depend on morning and evening shooting for making their big bags, as the birds lie better to dogs then than at any other time. They are also found more promptly, as their scent is strong, and is borne some distance away by the gentle breezes that generally blow for a few hours after sunrise and before sunset. They remain in the stubble fields all day in damp or cloudy weather, unless driven out by beating, and as they are then very tame, a person may approach them to within a few feet before they flush. The result is, that his bag is generally heavy, for the cool air and exercise brace up his nerves to such a pitch that he may score with his right and left barrels, in the majority of cases, without much trouble.

Later in the season, that is, from about the last of October to the latter end of December, the middle of the day is an excellent time for pursuing them, as they like to bask in the sun in open places: but as they are very wild, strong on the wing, and fly rapidly, it requires good shooting and hard hit-

ting to kill them. When flushed, if the day is cold and the wind blustry, they may fly ten miles or more before they alight. It takes No. 6 shot and a good choke-bore to bring them down at that time, whereas, No. 8 or 9 is fully large enough in the early part of the season.

They seem to be wilder in cloudy or rainy than in fine weather, late in the autumn, for they take wing almost as soon as they hear the human voice, or detect the presence of a dog, but on sunny days they will often permit the animal to approach them to within fifteen or twenty yards, as if they were too lazy to fly, or revelled so much in the sunshine that they disliked leaving the spots where its warm rays fell. When they do rise, however, it is with a startling whirr, and as soon as they get fairly on the wing they scud away at such a rate of speed that it requires a close, hard-hitting gun to stop them. Most of the birds spring from their shelter on hearing the voice, or the report of a gun, but several may stay behind, and as these often rise singly before a dog, a man can grass the majority of them. When the ground is covered with snow, they may be readily found in the timber, as they keep cackling, crooning, and chattering to one another, like domestic fowls when roosting.

Bee Notes for July.

It has been asserted that it injures the queen to have her wings clipped. This is not true. Structurally, the wing is very simple; it consists of a thin membrane, spread over veins which are firm, and consist of a double tube, one inside the other. The inner tube carries the air, and the outer the blood to nourish the wing. Clipping has been practised by many of our best apiarists for years, and no one has ever detected the least harm from it. Ants do the same thing by their queens, and for the same purpose. The advantage of this practice is great. There is no danger of losing a colony. The bees will come forth from the hive, and the queen will, as usual, attempt to follow, but is unable to go with the swarm. The bees will generally cluster, though they may not; and as soon as they find that the queen is missing, will go back to the hive. The queen may get so far from the hive that she can not return, but this is the loss of the queen, and is far less than the loss of a strong colony. In five cases out of six the queen will return all right.

This practice not only saves bees, but time as well. The hiving of swarms is often a great task, and when they alight, as they sometimes do, at the very top of a tall tree, it is well nigh impossible. This matter becomes still more serious when several colonies come forth at once. They often cluster all together, and the trouble of separation and properly hiving them is great. If the queen's wing is clipped, all of this is saved. One has only to go to the front of the hive, and as the queen comes forth, which is usually late in the exit, pick her up and put her in a cage; a tumbler turned over her in the new hive will do. Next remove the old hive a few feet temporarily, and put the new hive containing the queen on the old stand. It is well to fill the new hive with "foundation," and to add one frame of brood, in all stages, from the old hive. The bees will soon come to the new hive, and when all have entered, the new hive may be put in the desired place, and the old one returned to its old stand. At nightfall, liberate the queen, and all is done. If it is desired to prevent any further swarming, we have only to examine the old hive, now nearly empty of bees, and destroy all of the queen cells but one, which should always be the largest. In this way hiving takes but a small amount of time and labor.

The best time to clip the queen's wing is when she commences laying. As soon as eggs are seen in the worker cells, which will be about eight days after the queen leaves the cell, we should clip the queen, as then there are few bees, and it is easy to find her. If the wing is clipped before there are eggs, very likely she may not have mated. The queen only mates on the wing.

Until one has had some experience, the clipping better be done in-doors, before a window; if the queen escapes, there will be no danger of losing her. She will fly to the window, and is easily caught. Catch the queen by the wings with the right hand, and let her feet rest on the left hand, taking care not to press her abdomen. She will not use her sting. With one of the fingers of the left hand, on which she is now resting, press down on her feet, so as to hold her. Then take a pair of small scissors, held in the now liberated right hand, and carefully cut off about one-third of one of the front wings. As the queen is resting on her feet, there will be little danger of cutting them. For years we have always clipped all of our queens, and have experienced only advantage. We could not think of keeping bees, and not practice this method.

Bees at the Fairs.

At the last National Convention, which was one of the most pleasant and profitable bee-meetings ever held in America, it was resolved to make an effort to have many fine exhibitions at the State and district fairs of 1882. In England and other parts of Europe, these exhibitions are conducted on a grand scale, and excite much interest. They are thought to be great educators, and to stimulate the honey market to a large degree. Last year a very successful exhibition of this kind was held at Toronto, Canada. A similar exhibition was held at St. Joseph, Missouri. This, too, was a great success. It is the aim at these exhibitions to have a large show of honey, bees, and apiarian implements. Also to manipulate the bees, at certain specified times each day—behind a screen, so that no harm can result from stings. It is desirable to have a separate building, a little apart from the others, which need not be expensive, and where the bees shall be kept. It is important to secure the offering of generous premiums. The State and Central Societies of Michigan have already secured favorable action by two of the largest Agricultural Societies of that State. Let all other societies do the same. It is probable that in no other way can the interests of bee-keepers be so rapidly advanced.

NOTE.—The cold spring has been very unfavorable for bees. Those who have followed our advice and fed their bees, have done wisely. One of the largest bee-keepers of the country writes us that his bees stopped breeding entirely in May. This would not have occurred if he had fed liberally. There is no doubt that the Syrian and Cyprian bees are far ahead of the Italians in breeding early in the spring.

Notes on Time of Cutting Hay.

BY PROF. J. W. SANBORN, HANOVER, N. H.

I have read the articles of Prof. Jordan, and the remarks in allusion to his and my work on "Early *versus* Late Cut Hay," in the June number of the *American Agriculturist*, and wish to add a word. I started with the belief that both practice and science taught that hay should be cut at least as early as bloom. My experiments have forced me out of this conviction, and turned my attention to the scientific side of the question, and I am convinced, from as thorough a study of the matter as present facts will admit, that science has far from shown that hay cut in bloom is superior to hay cut out of bloom. I am inclined to believe that the scientific facts of to-day rather favor the later cutting. The various materials classed under the general term, carbohydrates and albuminoids, and perhaps of fats, undergo a material change from bloom to a period subsequent to that time, and those changes, on the whole, are favorable to feeding value. The German digestion tables were for a long time considered conclusive on this point, in favor of the earlier cut hay. I deem them entirely inconclusive. First, digestion does not measure the amount assimilated, and if it did, it would be still inconclusive, for the food digested at bloom is not the food digested out of bloom, for, as already said, grass undergoes a material change in composition from bloom to a period subsequent to bloom. After four years of accurate trials, under carefully arranged conditions, I conclude that Timothy will grow from 30 to 40 per cent from bloom to fifteen days following; that a pound of later cut hay will make more growth of steer or of milch cow. It will produce less milk if cut more than a week after bloom, but it will have a higher percentage of cream. The total nutritive effect of hay, cut after bloom, if prior to a full formation of seed, so that it will "shell" in ripening, is greater.

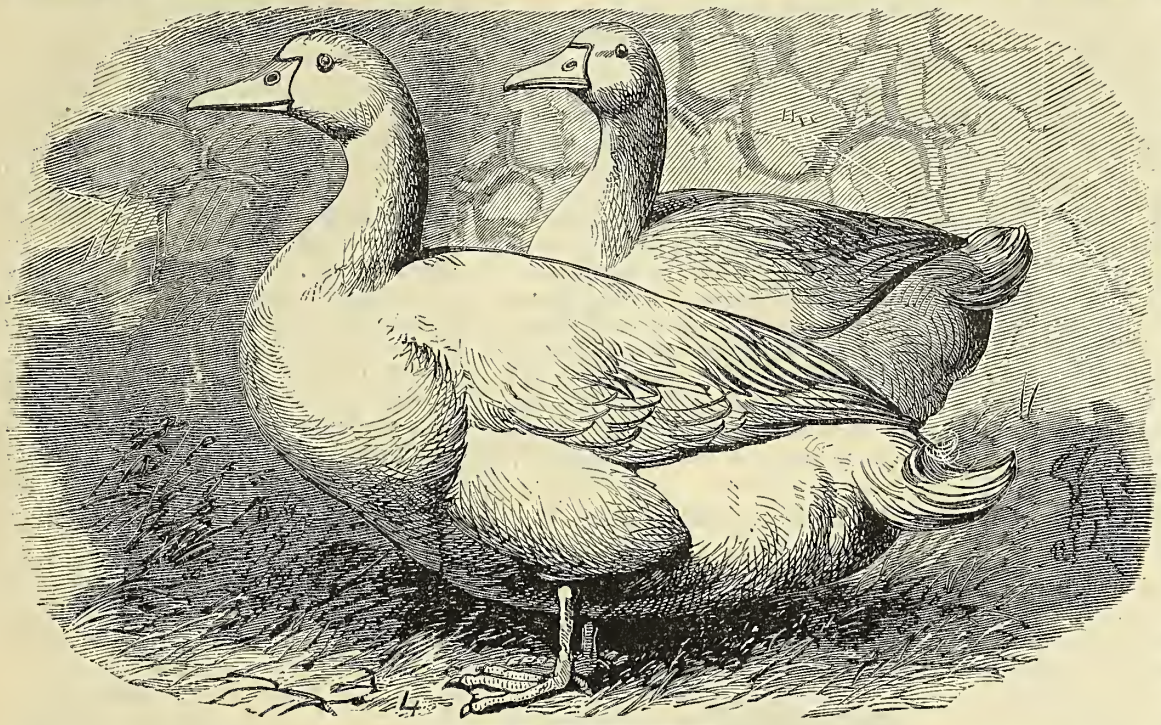
How to Save Liquid Manure.

In ordinary farm practice, by far the larger part of the liquid manure of the stock kept is lost. No effort is made to save it. There is no barn cellar, no gutter behind the stabled animals, no absorbents. Analysis shows that the liquid manure is quite as valuable as the solid, or even more so. In 1,000 pounds of fresh horse dung there are 4.4 pounds of nitrogen, 3.5 of potash, and 3.5 of phosphoric acid. In horse urine there are 15.5 pounds of nitrogen, and 15.0 of potash. In 1,000 pounds of fresh cattle dung there are 2.9 pounds of nitrogen, 1.0 of potash, 1.7 of phosphoric acid. In the urine, 5.8 pounds of nitrogen, 4.9 of potash. These are the most valuable constituents of manure, and no farmer can afford to have them so generally run to waste. There is very little loss where there is a gutter-well supplied with absorbents, and a barn cellar well coated with dried peat, muck, or headlands, to absorb the liquids as fast as they fall. But barn cellars are still in the minority. Mr. Mechi had a very expensive apparatus for distributing the liquid manure over his farm, by means of tanks and pipes, and thought it paid, but failed to convince his cotemporaries of the fact. However that may be, it is out of the question to apply liquid manure in this manner, economically, upon the average farm. It takes too much capital, and requires too much labor. By the use of absorbents, it can be done economically on a small or large scale, with very little waste. Some use a water-tight box, made of thick plank, covering the floor of the stall. This is a very sure way to save everything, and the only objection to it is the expense of the box, and the increased labor of keeping the stalls clean. We used for several years dried salt-marsh sod, cut in blocks eight or ten inches square, taken from the surface of the marsh in ditching. This had an enormous capacity for absorbing liquids, and a layer of these sods would keep a horse or cow comfortably dry for a fortnight. Refuse hay or straw was used on top for purposes of cleanliness. The saturated sod was thrown into the compost heap with other manure, where it made an excellent fertilizer. Later we used saw-dust, purchased for the purpose at two cents a bushel, as bedding for a cow kept upon a cemented floor. A bed a foot thick would last nearly a month, when it was thrown out into the compost heap. The saw-dust requires a longer time for decomposition, but saves the liquid manure. Our present experiment, covering several months, is with forest leaves, principally hickory, maple, white-ash, and elm. A bushel of dried leaves, kept under a shed for the purpose, is added to the bedding of each animal, and the saturated leaves are removed with the solid manure as fast as they accumulate. The leaves become very fine by the constant treading of the animals, and by the heat of their bodies, and the manure pile grows rapidly. It is but a little additional labor to the ordinary task of keeping animals clean in their stalls, to use some good absorbent, and enough of it, to save all the liquid manure. What the absorbent shall be is a question of minor importance. Convenience will generally determine this matter. No labor upon the farm pays better than to save the urine of all farm stock by means of absorbents. These are in great variety, and, in some form, are within reach of every man that keeps cattle or runs a farm. Stop this leak, and lift your mortgage.

CONNECTICUT.

Aylesbury Ducks.

White occurring without intermixture of other color in the hair or feathers of animals and fowls, is evidence of change effected by domestication. This color, or lack of color, becomes a very persistent characteristic. The accompanying engraving of Aylesbury Ducks represents one of the most beautiful of the white breeds of poultry. All white fowls are beautiful and attractive. We have white breeds of every kind of domestic fowl, and they all have such notable excellencies, that their admirers claim for each that it is the best of its kind. This is noticeable in white geese, which have the best plumage; white turkeys are most domestic, and white barn-door fowls are most prolific. Aylesbury Ducks are claimed to be more prolific and to fatten more rapidly for market than other large breeds. This variety undoubtedly originated in the vicinity of Aylesbury, England, where large numbers are still raised annually for the London market. Its characteristics are distinctly marked, namely: abundant but close-fitting plumage of the purest white; a beak of peculiar form, being long, straight, and broad, and set on a line with the forehead; most noticeable, however, from its being of a distinct flesh-color; it sometimes inclines to buff, but this is objectionable. The most delicate pink (as an English breeder enthusiastically said to the writer, "pink as a lady's nail,") is the color preferred; the legs are of a light orange color. Ducks and drakes are almost precisely alike, the latter distinguished only by the curling feathers of the tail and by the voice, or lack of voice.

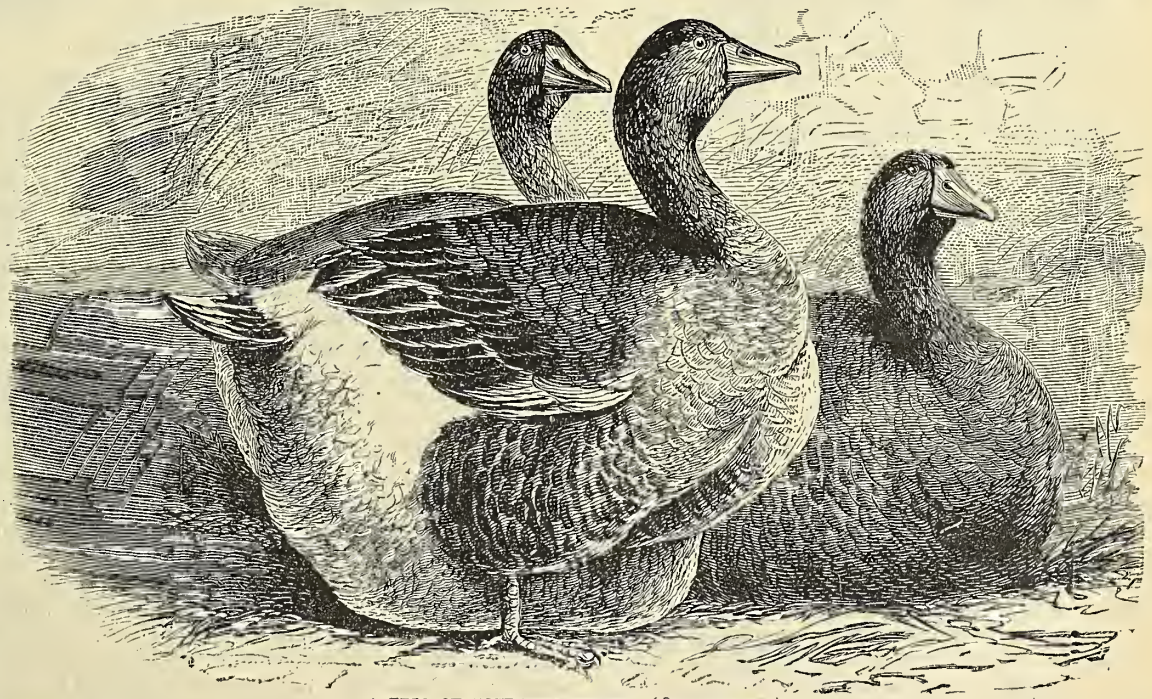


A PAIR OF AYLESBURY DUCKS.

This is an old and well-established breed, and in favorable locations, breeds very true. Breeders so located find it is not difficult to obtain the pink bills without stain of yellow or blemish of dark streaks or specks. This is supposed to depend upon the purity of the water, and on the gravelly bottom of the brooks with which their bills are constantly brought in contact. Exposure to the sun tans them, and, from some not well-known cause, it is almost impossible to obtain perfect bills in many places, though the birds grow large and fine.

It is customary in and near Aylesbury to confine the ducks in warm houses early in the season, and to induce the earliest possible laying, that the young ducks may be marketed very early in the season, and high prices secured. They come to the market just at a season when game and other poultry are scarce and high. Now, when the Aylesburys are removed, and, as in this country, are treated like other kinds of ducks, they retain this tendency to lay, and hatch a brood early in mid-winter, only for the first generation from importation; even then to a less degree than the imported birds show it. The tendency to lay very early would no doubt be maintained if it were encouraged as it is at home. In regard to the care of ducks, it is well to observe that the more a variety is changed by domestication, the more attention they need, and usually the more profit they yield. Many common ducks lay a clutch of perhaps 20 small eggs; in sitting, cover half or more, and hatch them out, while the Aylesbury Duck will lay 60 eggs or more, but until she begins to show a tendency to sit, usually a week or ten days before she sits, she makes a sort of nest, and there she deposits her eggs. The only way to secure all the eggs is to shut up the ducks at night. They will usually lay an egg apiece between dawn and eight o'clock, and as soon as each has laid, all may be let out. They all march straight for the water, and if let out too soon, some eggs will be almost surely found in the bottom of the pond. Ducks are voracious and almost omnivorous feeders; they are fond of grass and water plants, water-cress especially, and are diligent foragers for snails and the little shell-fish of fresh water streams, ponds, and swamps; and besides, on dry land, they are indefatigable insect hunters; young ducks being often very useful in a vegetable garden, where they gather and destroy many plant pests.

A pair of Aylesbury Ducks, fit for exhibition, ought to weigh at least 12 pounds; in England they often reach 16 pounds to the pair, and are occasionally heavier by one or two pounds, thus almost equalling the weight of the heaviest specimens of Rouen Ducks.



A TRIO OF TOULOUSE GEESE.—(*See next page.*)

Toulouse Geese.

The common gray goose possesses the markings of its parent, the wild goose of Europe and Asia, known in England as the "Gray Lag." The fine variety of which we give an engraving (page 285) has the same colors, except that the dark plumage is of much richer hues, and, by contrast, at least, the light feathers whiter, while the bill and legs are of a deep orange color. The Toulouse Geese early develop a deep-hanging fold of skin pendant, like the keel of a boat, beneath the body. The evidence that the breed originated in the vicinity of Toulouse, in France, is meagre. Nevertheless, we cannot countenance the suggestion that they received their name because their skin was *too loose* for them. The first of the variety which were seen in England, came, it is said, from Marseilles, in the south of France. Those purchased probably came from Toulouse to Marseilles, for this name is applied to no distinct variety in France.

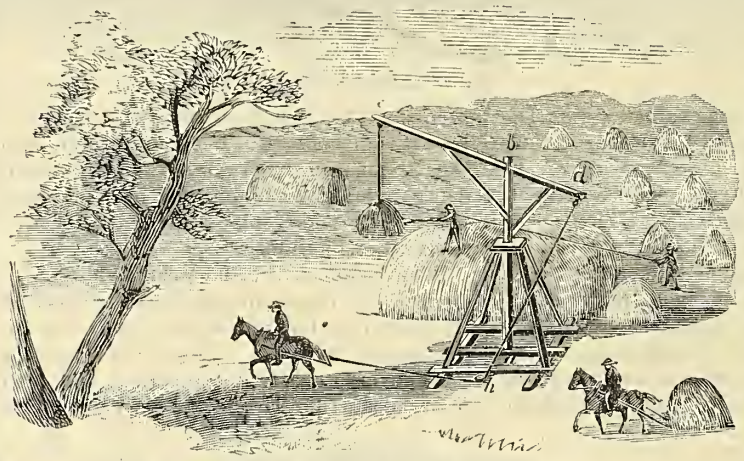
Toulouse Geese, when not inordinately forced for exhibition, are hardy, early layers, and reasonably prolific, often raising two broods of goslings a year. The young early take care of themselves on good pasture, and grow with astonishing rapidity. It is not well to let them depend wholly upon grass, but at first to give a little wet-up oat-meal daily, and afterwards a few oats or handfuls of barley, thrown into a trough or shallow pool, to which they have access. Geese bear, with little danger, any degree of pampering and stuffing, but in our experience this is likely to produce such accumulations of internal fat as to prevent fecundity. These fine fowls attain, on a good grass range, nearly double the weight of common geese, and, forced by high feeding, a pair have been known to reach the weight of 60 pounds. Twenty-pound geese are not rare. Early goslings, if well fed, will attain that weight at Christmas, and even a 10-pound "green gosling" is a delicacy which might well suggest the devout proverb of the Germans, that a "Good roast goose is a good gift of God." The fact is, that common geese make a poor show upon the table unless they are very fat. This is distasteful to many persons, and they can hardly be very fat before the late autumn, because we need grain to fatten them. With this variety, however, and the Embden, which matures early and attains a great weight also, it is different; the goslings are heavy before they are fat, carry a good deal of flesh, and are tender and delicious early in the season, when simply grass-fed, or having had but little grain.

In breeding geese, the surplus stock of goslings are killed off every year. None need be saved for wintering and breeding, except it may be well to keep one or two fine geese to take the places of old birds killed or hurt by some accident. Geese lay regularly, brood and rear their goslings well for fifty to eighty years, and it is said grow tougher every year. So if one has a good breeding goose, one which does her own duty well, and is reasonably peaceable towards other inhabitants of the farm-yard, it is best to keep her for years. Sometimes a goose will be very cross, killing ducklings and chickens, attacking children, etc. Such an one is a fit candidate for the spit. Ganders are generally much worse, and usually one more than five or six years old becomes absolutely unbearable. So provision is naturally made to replace the old ganders every three or four years. It is besides necessary to do so, for, though a young gander will attend four geese very well, an old one confines his attentions to one only, and often proves infertile at six or eight years old, getting crosser all the time.

A part of the profit of keeping geese depends upon their yield of feathers. When geese are bred carefully for exhibition and sale at high prices, only old ones should be plucked, and they only once or twice in the season. But when raised for market, the old ones may be plucked three times, and the young ones once before killing time, and the flock ought to yield, on an average, an aggregate of 18 to 20 ounces of dry feathers, besides considerable down, at the summer pickings. Common geese will yield about a pound of feathers a year, if close picked, and they are often picked cruelly close. This is unnecessary, for at the right time the feathers have a very slight hold, and the operation of plucking them is painless.

A Frame for a Horse-Fork.

Mr. Frederick Johnson, Clinton Co., Ill., sends us a sketch and description of the method of putting up the hay crop, that is much practised in his vicinity. He writes: "We shock our hay as soon as possible after it is cut, barely giving it time to wilt. If the weather is favorable, it remains in the shock two days, when it is stacked, and if it is well done, it looks bright and green. If bad weather is coming on, we stack in the afternoon what has been cut in the forenoon, taking it up from the sward with a hay-gatherer, but it is best to leave it in shocks for at least two days. The derrick is a simple affair, and saves a vast amount of hard labor. It is placed on two sticks of timber, shaped like sleigh-runners at the ends, so that it will drag easily from one stack to another. The mast, *a*, *b*, is 22 feet high, and the cross-piece, *c*, *d*, 16 feet long; it rests on the middle stringer, and an iron pin keeps it in place at *a*; pulleys are placed at *c*, *d*, and *h*; with the braces and collar, the derrick is complete. When ready for stacking, place the derrick two feet from the stack bottom, always on the side, and draw the hay up at the end. (I make the stacks 10 feet wide, and 20 feet long.) Drop the hay in the center of the stack, and the stack will stand straight when it settles." The structure and method of operation of the derrick is shown in the engraving which is given above.



A METHOD OF GATHERING AND STACKING HAY.

Poultry.—Food and Feeding.

BY D. Z. EVANS JR.

Poultry breeders, as a rule, pay too little attention to food and feeding, which accounts, in a great measure, for the frequently meagre profits—if there be any at all—from the fowls. Those who exercise care and judgment in all the varied details of poultry management, have the best balance to show at the end of each season. While almost every other matter connected with the breeding and rearing of poultry has had particular attention paid to it, corn has been the rule, and the quantity, quality and time of feeding, has seldom been considered worthy of attention. Fowls with unlimited range, securing most of their living during the late spring, summer, and the early fall months, do not suffer from the feed so much, as do birds penned up during the entire breeding season, at least within the narrow confines of a small yard or run, and dependent entirely on their owner for the quantity and quality of their food. Pure-bred fowls are those which suffer the most from neglect. In most cases,

Special Foods

are desirable. Laying hens or pullets, do not require such food as will induce them to acquire a superabundance of fat, for this at a certain stage prevents the production of eggs, rendering the birds sluggish, and disposed to fatal diseases. When the birds are to be fattened for immediate consumption, then strong, fat-producing food is needed, and in liberal quantities. Corn, in its different forms, is the best and cheapest, no doubt, for this purpose, while for laying hens, wheat, wheat-screenings, etc., are preferable, and generally used by successful poultry breeders. Aside from its being better than corn, wheat is also as cheap. One of the greatest helps to successful poultry management, and one upon which frequently hinges the question of profit or loss, is

Regularity in Feeding

the stock. This is readily proved by dividing the flock, and feeding each lot with the same kind and quantity of food, giving one the food at regular intervals, and giving the other lot their rations when it is the most convenient. In two or three weeks, carefully note the result, and it will surprise even the most casual observer. By feeding those fowls which have full liberty at regular times, all are sure to return home on time, thus preventing straying of the birds. This rule is especially good with turkeys, which are naturally such great strollers. In summer, six A. M., and six P. M. are very good times, though it is generally best to make the evening feed about five o'clock, or a little before, where it can be conveniently done. On grain farms, where the fowls are permitted to stroll around at will, one feed a day, in the evening, is all the birds require. There is some little art, if so we may style it, in

Feeding Young Chicks,

to make a healthful and vigorous growth. Fully nine-tenths of the mortality amongst poultry, from sickness or disease, occurs while the chicks are still in the "downy" state, and the majority of this loss occurs from improper food, and careless or ignorant feeding. Corn-meal, which is far too generally used, is unfit for young chicks, being too heating for their tender and immature digestive organs. Corn-meal has killed more young chicks than rats. The best food we have ever found for young birds is stale bread, either crumbled up and fed dry, scalded and fed when cool, or else merely moistened in fresh milk. Where milk is abundant, it should always be used, and if the young birds get plenty of milk, in some form, they will grow so rapidly as to astonish those who have never given milk liberally to their poultry. We know of one breeder, a large dairyman in Chester County, Pennsylvania, who feeds the principal part of his refuse milk to his poultry, old and young, and his birds are not only singularly free from disease, but large, and finely developed in body and feathering. This breeder gives milk the credit of it all, but it may be due in part to excellent care.

A Farm Post-Driver.

BY T. H. IRWIN, LUCAS CO., IOWA.

Observing many useful labor-saving contrivances in the *American Agriculturist*, to facilitate operations on the farm, I here contribute something that may be of use to some of its readers. In this part of the West (Iowa), the fence-posts to be set are usually roughly pointed, and then driven into the ground with a maul or heavy sledge, the operator standing on a stool, box, or barrel, or in a wagon, to get the necessary elevation. To swing a heavy maul or sledge all day is not an easy task, and it is often difficult to hire men willing to undertake such heavy labor, especially when a farmer has a mile or more of fence to build. This method is largely employed here, and posts so set are found to be much firmer,

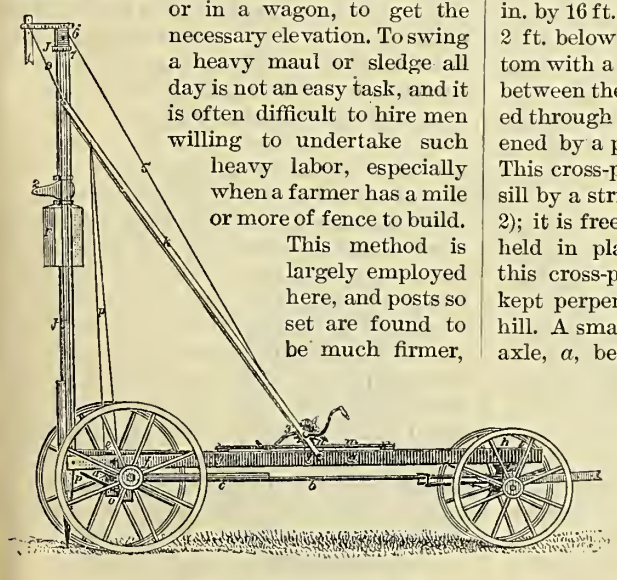


Fig. 1.—THE POST-DRIVER.

and are less affected by frost than if set in holes dug with spade or post-auger. When the frost is just out, in early spring, the posts are quite easily driven, but it is usually a muddy, disagreeable job at such a time, and the farmer cannot always be ready to do the work just when the ground is in best condition. Having a great many posts to set almost every season, I built a machine for driving them, and am well satisfied with its workings, for I can now drive posts when I am ready, and in any ground, even in an old solid road. The posts are not split and battered, as when driven by a sledge, and I do not have to employ extra strong help at extra wages. An axle, *a*, fig. 1, of hard-wood, 8½ ft. long (mine is made of a hickory sapling), has spindles shaved to fit the hind wheels of a common wagon, which are fastened on by linch-pins, leaving about 6 ft. space between the hubs. A coupling-pole, *b*, 13 ft. long, is framed in and strongly braced, *c*, at right angles with the axle, and connects at the front with the front axle of a common wagon. The main sill, *d*, is one stick of timber, 6 by 8 in. by 14 ft. long, and has a cross-piece, *e*, framed in the end. Two side-pieces, *f*, are 2 by 4 in. by 5 ft. long, are pinned or bolted to the main sill at *g*, and cross-pieces framed into them as shown in fig. 2, so framed that the lower edges of the side-pieces will be 2 in. from the axle, when the main sill rests on the axle. The side-pieces, *f*, should be 22 in. apart at the ends; the front end of the main sill rests on the front axle, in place of a bolster, and the "king-bolt" passes through it at *h*; the upright guides, *i*, are 2 by 4 in. by 14 ft. long, bolted to the side-pieces, *f*, with a space of 14 in. between; a cap, *j*, 2 by 3 by 26 in. long, is framed on top. Two braces, *k*, 2 by 4 in. by 16 ft. long, are bolted to upright guides, 2 ft. below the cap, and connect at the bottom with a cross-piece, *l*, 2 by 8 by 22 in. long, between the braces. It has rounded ends passed through 2-in. holes in the braces, and fastened by a pin outside, to form a loose joint. This cross-piece, *l*, is held down on the main sill by a strip, *m*, and steadied by cleats (fig. 2); it is free to slide back or forward, and is held in place by a short pin; by moving this cross-piece, the upright guides, *i*, are kept perpendicular when going up or down hill. A small windlass, *o*, is placed under the axle, *a*, between hangers framed into the axle, close to the hubs. Two brace-ropes or wires, *p*, are fastened to this windlass at the extreme ends, and wound around it a turn or two, each in an opposite direction, drawn tight and fastened to the main braces near the top. By turning the windlass, *o*, slightly, by means of a short bar, stuck in a hole, the machine may lean to either side, to conform to sidling ground, thus being adjustable in all directions. The maul, *r*, of tough oak, 14 by 18 in. by 2 ft. long, weighs about 200 lbs., is grooved to fit smoothly between the guides; the follower, *s*, is more plainly shown in figs. 3 and 4, also the simple latch by which the follower and maul are connected and disconnected. The square clevis, *t*, is of ¾-inch iron, suspended from the same iron pin, *u*, on which the pulley, *v*, is placed. It is partly imbedded in the wooden casing, *w*, which is 8 by 18 in.; this casing

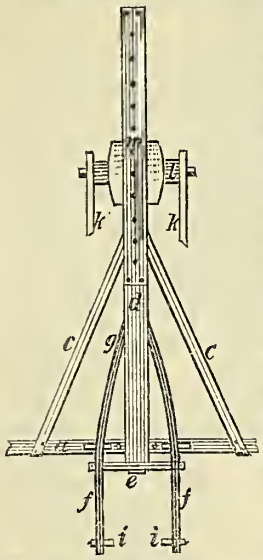


Fig. 2.—BOTTOM PART OF DRIVER.

serves to inclose the pulley, *v*, and also to trip the latch when brought together; the clevis, *t*, is caught under the hook fastened in the maul, is pressed into place by a small hickory spring, *y*, acting on a small iron pin, *z*; when it reaches the top, the crotch, 1, suspended from the top, comes in contact with the pin, 2, and the clevis, *t*, is pressed back, and releases the hook, *x*, when the maul drops; the windlass, 3, has two cranks, and a ratchet for safety and convenience. The rope passes from the windlass over the pulley at the top, down and under the pulley, *v*, then up, and is fastened at 7, on the cap, *j*, wire braces at 8. By releasing the cranks and ratchet, the follower will run down the guides, and, striking the maul, will "click" the latch into place, ready for another hoist. For two men it is easy work, and can be handled quite rapidly. Drive astride the proposed line of fence; lay a measuring-pole on the ground to mark the spot for the next post; drive forward with the post-driver, having the maul partly raised; set up a post, and "heave ahead."

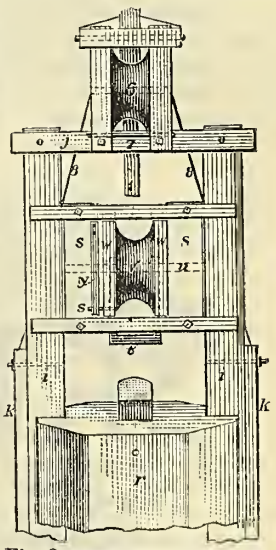


Fig. 3.—THE UPPER END OF THE UPRIGHT.

Hair Balls in a Sheep.—Mr. J. Davis, Colman Co., Texas, sends us some balls, from ½ to ⅞ of an inch in diameter, found in the stomach of a sheep. They are popularly known as hair balls, a form of concretion frequently found in the intestinal canal of animals. These specimens are principally composed of fibres of wool, with some fragments of vegetable matter derived from the food and intestinal secretions. They could not have been the cause of death, as they are often found of considerable size in the alimentary canal, and particularly in the stomach, of healthy animals. When, from their form or size, they become a source of irritation they may produce disease, but under ordinary conditions they may be considered as harmless. Intestinal concretions vary widely in composition, and they often have a distinct nucleus, around which the remainder of the mass is formed. Hair balls several inches in diameter are not uncommon in the stomachs of cattle, and they are often quite hard, from the large proportion of mineral matters they contain. An intestinal concretion, measuring 28 inches round, and weighing 19 lbs., is reported as having been found in a horse; the nucleus was composed of oats. In Scotland, where oat-meal is a common article of diet, intestinal concre-

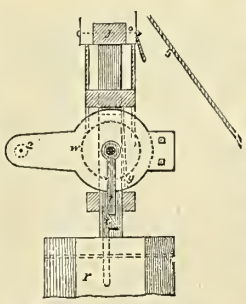
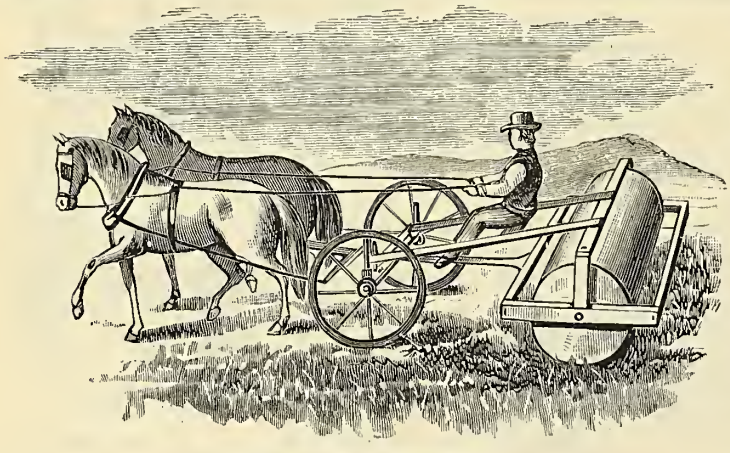


Fig. 4.—SIDE VIEW.

tions composed of the hulls of the oats were of common occurrence, but as greater care is now exercised in preparing the grain for human food, these peculiar intestinal concretions are becoming comparatively rare.

A Bush-Roller.

Mr. "E. D. W.," Plumas, Co., Cal. sends us a sketch of a device which he has made for clearing sage-bush land. It consists of a roller 8 feet long, and 2½ feet in diameter, coupled by a short tongue—6 feet is long enough, to the forward wheels of a wagon. A standard at each end of the roller-frame supports a cross-piece just clear of the roller. Upon this cross-piece, about 4 feet apart, and extending to the bolster of the wagon, are bolted two pieces of 1¼ by 6-inch spruce boards. A board is placed across the center for a seat, thus making a complete and easy inclining "buck-board." Mr. W. writes: "With a span of good horses and this 'machine,' one can roll from eight to ten acres of sage-bush in a day; and it is so easily killed, that in two or three weeks after such treatment, it will burn off like a prairie on fire. I also use the same for every purpose requiring the use of a roller on the farm, finding it much easier on the horses in turning than the common roller."



A HOME-MADE BUSH-ROLLER.

Permanent Pasture.

BY PROF. G. C. CALDWELL, CORNELL UNIVERSITY.

One might suppose, after searching in vain through the pages of many of the smaller works on agriculture for some information about pastures, that they are of small account to the farmer; and yet no one will deny that, under suitable conditions of soil and climate, they have a very important place in the farm economy. Many pastures are taxed beyond their powers for carrying the stock of the farm, and in too many instances are crowded off into parts of the farm where the soil is too poor for tillage, and even then treated with the utmost niggardliness as regards care or manuring. With this as the common idea of a pasture, making it little better than wild land, it is no wonder that it escapes mention in so many books, that treat of nearly everything else pertaining to the farm.

On a rich Leicestershire (England) pasture, it was estimated by Dr. Lawes that an increase of 500 lbs. in live weight of fattening oxen was produced on each acre in six months' grazing. In experiments at Woburn, 3,500 lbs. of clover hay, 1,600 lbs. of corn or oil-cake, and 5 tons of Swedes were required to give the same amount of increase; these quantities of fodder were estimated to be equivalent to 3½ tons of English hay. Boussingault states that on some of the rich pastures of Holland, an area of a little more than two acres has been found sufficient to fatten an ox in 5 to 6 months' grazing, and that on the most fertile bottoms near Dusseldorf, about ⅜ of an acre is sufficient to keep a milch cow. When a fattening animal is started in fair condition on a good pasture in spring, many results in England have shown that a gain of from 1 to 1¼ lb. a day may be counted upon. These estimates of the productive power of pastures differ not a little, but nevertheless they combine to show what can be done with grazing land if it is decently treated.

What is good treatment of a pasture? Good pasture cannot be made on poor land. Such parts of the farm as are too poor for tillage, are also too poor for pasture; better encourage the growth of wood there, than to starve cattle and make the land only less and less valuable every year, if indeed it can be made any poorer. It should be clean land; if charged with the seeds of weeds by previous neglect, these must be cleaned out as completely as possible by culture of hoed crops, before laying down to grass. Thistle and dock pasture may be good for donkeys, but not for cows. If the weed seeds have an even chance with the grass seed, the grass will have but little hope of getting the upper hand, even though it has such a wonderful power of taking possession of the land where it once secures a good foothold.

The land should be seeded with a large variety of nutritious grasses. An English farmer, in the Journal of the Royal Agricultural Society, mentions sowing 228 lbs. of seed on six acres, comprising 16 different kinds of grass. With such a variety the sod becomes more perfect, and the yield is larger, more uniform through the season, and more nutritious. Mr. Geddes prescribes 24 lbs. of seed per acre, comprising 6 kinds of grass—red clover, timothy, red-top, orchard grass, alsike, and white clover. It is not unlikely that, by following the English custom, and sowing a still greater variety of such grasses as will thrive in our drier climate, we would get a better and more durable sward, and a better pasture. The work of making a pasture does not end here; the English saying, that "to make a pasture, breaks a man," may be taken as showing that even in that country, where, with a cooler and more moist climate, it is easier to get and keep a sod than here; it is not a light matter of a year or two to establish a good and durable pasture. Dr. Lawes says that it took him 15 years to make a really good permanent pasture for fattening animals, on a portion of his estate. It is a common practice in England to feed cotton-seed cake to the stock grazing in the pasture in the first few years after laying it down, in order to increase the richness of the manure dropped on the land. The critical period in the life of the pasture arrives in the second or third year; and if concentrated fodder has not been given to the stock, manure must be applied to carry the young sod safely through this period.

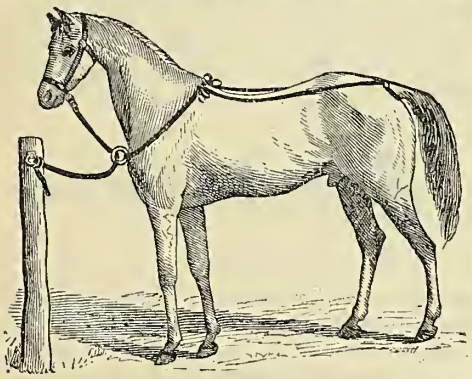
It is singular that the notion should be so widely prevalent, even perhaps among those who give some thought to their grazing lands, that a pasture will take care of itself, and all the manure made on the farm or bought may be put on the tilled land. This idea is as wrong as it is to suppose that wheat or corn can be raised year after year on the same soil without manure. Milch cows occupy our pasture lands as often as any other stock; and in their milk, phosphates are carried off from the soil of the pasture to such an extent as to lead, sooner or later, to certain exhaustion, just as surely as in the continued cultivation of wheat on tilled land. The effect of the exhaustion is plainer to the eye in the diminished crops of the wheat field than on the pasture, which may perhaps continue to look green and thrifty, while poorer grasses are all the while creeping in and displacing the finer kinds, which require a richer soil. The pasture must be treated with its share of the available manure of the farm, or else it will run down. With favorable climatic conditions, it is undoubtedly cheaper to keep a pasture, once well made, in good heart for a number of years, than to let it run out for want of food, and then make it over again. Dr. Lawes' doctrine, the result of his own experiments and observations is, that pasture land must be well stocked with nitrogen and potash, and that phosphate must be supplied from time to time, as well as the other two important plant nutrients, to replace what is carried off in the produce sold. Hence a top-dressing of fine bone-meal is likely to prove beneficial, although there are cases where the use of phosphate has done but little good. Nitrate of Soda is often used with good effect, at the rate of from 100 to 150 lbs. per acre in the course of the year; and the statement is very emphatically made by those who speak from experience, that frequent dressings of manure, in small doses, produce better grass than when the whole quantity for the year is applied at once. Plaster has sometimes produced excellent results on pastures by bringing in that most desirable forage plant, white clover, and wood ashes have also produced a similar effect. There can be no safer dressing than rotted manure, put on in the spring, when the plants will soon be ready to take it up; but if all the available stock of this manure is wanted for the tilled land, then artificial manures should be used.

Pumpkins are usually grown as a "stolen crop," that is on land not specially devoted to their production, the seed being planted in "every other hill of every other row" of corn or even of potatoes. While not very nutritious they have a certain feeding value, due in part to the sugar they contain and, perhaps in a greater degree, to the fact that they gratify and stimulate the appetite and cause the animals to consume a larger quantity of other food, and digest it more thoroughly. But whether it really pays to grow pumpkins, some think an open question, for on general principles, it may be said that if

a crop is worth growing at all it is worth having land devoted to it, and a suitable cultivation. Yet it would hardly pay to devote land to the production of pumpkins. A good crop might easily be secured and it would possess some value. But, with a little more expense, the same land might be made to yield a crop of squashes, which would be much more nutritious and valuable. When grown in connection with other crops the squash does not succeed as well as the pumpkin. It does much better with potatoes than with corn, but is not a sure crop when planted with either of them.

A Halter Attachment for a Pulling Horse.

The accompanying engraving, from a sketch sent us by G. D. John, Whiteside Co., Ill., shows a device to cure a horse of the bad habit of pulling upon the halter. A 1/2-

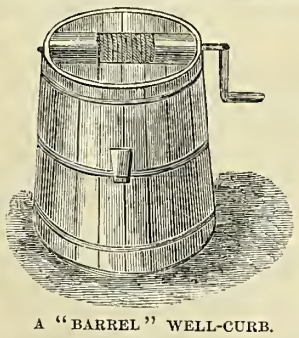


REMEDY FOR A HALTER-PULLING HORSE.

inch rope passes around the shoulders and along the back, under the tail; the halter-strap is run through a ring on the rope at the front of the shoulders, and then it is attached to the post or manger; a short piece of strap is used to fasten together and hold up the two parts of the rope that pass along the back. When the horse pulls upon the halter, a pressure is brought under the base of the tail, and the habit is soon abandoned.

A Barrel Well-Curb.

Mr. I. G. Fargo, Genesee Co., N. Y., writes us: "Perhaps some of your readers may be interested in my well-curb, which is convenient and durable. A common cooper made it, setting up the staves, which are 1 1/4 inch thick, as for a barrel, using 3 iron hoops. The shaft of the windlass is also of iron, to which a wooden cylinder is fastened by a couple of bolts driven through the wood and iron. In making the windlass, I fashioned the wood to the right size, and then split open the cylinder, cut a place for the shaft, fitted it in, and then drove bands over the ends. But a great deal will depend, as to its cheapness, whether one has the material on hand to make it. In this case I had the lumber (white-ash) for the staves, old wagon-tire for hoops, and a shaft for the windlass from a threshing machine cylinder. Even the spout was appropriated from an old chain-pump." Such a curb is strong, and looks much better than a common square one.



A "BARREL" WELL-CURB.

A Few Facts about Ensilage.

BY PROF. J. M. MCBRYDE, UNIVERSITY OF TENNESSEE.

The following facts bear directly on two of the most important questions connected with the subject of ensilage. 1st. The estimates of the loss involved in the process vary. By some the loss is considered ruinous, by others infinitesimally small. The methods of determining the loss vary as much as the estimates. It is deduced from the percentage of ash or of dry matter in the ensilage, from the weight of small quantities of green forage packed away in bags or boxes in the silo, or a cubic foot of the ensilage, etc. Such methods are confessedly inaccurate. The only safe procedure is to weigh every pound of green matter put into the silo, and every pound of ensilage taken out of it. All the green forage put into our silos last October was accurately weighed. Silo No. 3 (built of brick, and lined with cement) was opened early in January last. The ensilage was of excellent quality, with a pleasantly vinous odor. This silo was not exhausted until the last of March. Every pound of the ensilage was fed to our cattle after being first carefully weighed. We put 66,630 lbs. of green forage into the silo, and took out 52,890 lbs. of ensilage. This shows a loss of 13,740 lbs., or 20.62 per cent. The loss was no doubt increased by the length of time the silo stood open (nearly three months), and is, perhaps, greater than what would occur in general farm practice. It would appear from these figures that a farmer can reasonably expect to get 1,600 lbs. of ensilage from every ton of green matter. Will any of the other methods of curing or preserving forage crops give him equal, or anything approaching equal, returns in weight? But it will be immediately replied, "If not equal returns in weight, they certainly will in the superior quality of the food so preserved." Many hold that the loss falls principally, if not entirely, on the organic matter of the ensilage. Some assert that from 20% to 50% of this matter is destroyed. The nutritive value of ensilage is a physiological question, that can only be practically settled in the stall. If the greater part of the organic matter is destroyed by fermentation, and the ensilage is but little better than so much acidulated water, a few simple feeding tests will bring out the facts more effectually than a dozen analyses. And if it should be found that 4 lbs. or 5 lbs. of green forage, converted into ensilage, are only about equal in feeding value to 1 lb. of the same matter made into fodder or hay, then, clearly, the large saving of weight secured by the process of ensilage would not be sufficient to counterbalance the loss of nutritive value. If, on the other hand, 2 lbs. or 3 lbs. of ensilage are equal to 1 lb. of the dry forage, this saving of weight would be a matter worth considering.

In the August No. (1881) of the *American Agriculturist*, I gave a short account of numerous experiments bearing directly on this point. The results of these showed that, in mixed rations, 2 lbs. of ensilage would fairly replace 1 lb. of good hay. The same experiments, carefully repeated last winter, afforded results confirmatory of those of the preceding year. It should be premised that the animals experimented with this year were not the same as those fed last year, and also that all were fed, for about a month previous to the commencement of the tests, on a mixed ration of hay and ensilage—2 lbs. of corn ensilage were fed against 1 lb. of hay. The tests continued through the month of February. In order to allow of easy comparison, the amounts actually fed to each animal are not given, but simply the ration, that is, the daily ration allowed for every 1,000 lbs. of live weight. Three animals, all yearling steers, were fed exclusively on long forage: No. 10, weighing 428 lbs., received a daily ration of 20 lbs. of hay, and gained, in the 28 days, 22 lbs. No. 9, weighing 457 lbs., received 10 lbs. of hay and 20 lbs. of ensilage, and gained 28 lbs. No. 12, weighing 442 lbs., received 40 lbs. of ensilage, and gained 38 lbs. It is evident that, in these three tests, 2 lbs. of ensilage gave better results than 1 lb. of hay.

Three 2-year old steers were fed on mixed rations of hay and meal: No. 4, weighing 770 lbs., was allowed 20 lbs. of hay and 6 lbs. of cotton-seed meal, and gained 70 lbs. in the 28 days. No. 5, weighing 800 lbs., was fed the same amount of hay, and 6 lbs. of corn-meal, and gained 50 lbs. No. 6, weighing 715 lbs., was given the same amount of hay, and 6 lbs. of durra-meal, and gained 55 lbs. Three 3-year old steers were fed on mixed rations of ensilage and the same meals: No. 1, weighing 1,175 lbs., received 40 lbs. of corn ensilage and 6 lbs. of cotton-seed meal, and gained 65 lbs. No. 2, weighing 1,150 lbs., received the same quantity of ensilage and 6 lbs. of corn-meal, and gained 77 lbs. No. 3, weighing 1,040 lbs., received the same quantity of ensilage and 6 lbs. of durra-meal, and gained 70 lbs. It is sufficient for our purpose to notice only the relative effects of the hay and the ensilage. On comparing the results of the two sets of tests, it is seen that No. 4, fed on 20 lbs. of hay and 6 lbs. of cotton-seed meal, gained 5 lbs. more than No. 1, fed on 40 lbs. of ensilage and the same quantity of the same meal, but that No. 2, fed on corn-meal and ensilage, gained 27 lbs. more than No. 5, fed on the same meal and hay, and that No. 3, fed on durra-meal and ensilage, gained 15 lbs. more than No. 6, fed on the same meal and hay. In two out of the three tests, the results were much in favor of the ensilage.

From March 1st to March 15th, all six animals were allowed 50 lbs. of ensilage and 6 lbs. of cotton-seed meal a day (for every 1,000 lbs. of live weight). The weights taken on the latter date (15th) show that No. 4 had gained 70 lbs. in the two weeks, No. 5, 50 lbs., No. 6, 55 lbs., No. 1, 45 lbs., No. 2, 20 lbs., and No. 3, 30 lbs. On comparing the effects of a change of rations on Nos. 4, 5, and 6, the remarkable fact appears that, in the case of such animal, 50 lbs. of ensilage and 6 lbs. of meal gave in two weeks exactly the same gain that 20 lbs. of hay and the same quantity of meal gave in double the number of days (28),—No. 4 gaining in each test 70 lbs., No. 5, 50 lbs., and No. 6, 55 lbs. On March 15th, our supply of ensilage being nearly exhausted, 12 1/2 lbs. of hay were substituted for 25 lbs. of the ensilage, and for a week each animal received a daily ration of 25 lbs. of ensilage, 12 1/2 lbs. of hay,

and 6 lbs. of cotton-seed meal. The change was made in order to prepare the animals for a ration of hay and meal. The weights, taken on the 22d, show, when compared with those of the two preceding weeks, that the change had, in the 7 days, injuriously affected all the animals except No. 2. This animal made a gain of 15 lbs., but No. 1, gained only 5 lbs., No. 3, 10 lbs., No. 4, 7 lbs., and Nos. 5 and 6, each 20 lbs. From March 22d to April 13th, each animal received daily 25 lbs. of hay and 6 lbs. of cotton-seed meal. The weights of the animals, on March 22d, were as follows: No. 1, 1,290 lbs., No. 2, 1,262 lbs., No. 3, 1,150 lbs., No. 4, 917 lbs., No. 5, 920 lbs., No. 6, 845 lbs. The same animals, on April 13th, weighed respectively, 1,280 lbs., 1,237 lbs., 1,155 lbs., 947 lbs., 940 lbs., and 835 lbs. It appears, therefore, that in the 19 days, No. 1 lost 10 lbs., No. 2, 25 lbs., and No. 6, 10 lbs., and that No. 4 gained 30 lbs., and No. 5, 20 lbs., and No. 3, 5 lbs. Compared with the rapid gains of the preceding periods, these figures are significant.

The results of these several experiments, carefully conducted and long continued, and agreeing so closely with those of last year, are very favorable to ensilage, and show that when mixed with nitrogenous matter, two pounds of it are fully equal in feeding value to one pound of hay. I should perhaps state here that samples of this ensilage, tested in our laboratory by Prof. Brown, gave 78.81% of water. Ensilage should not be condemned on purely theoretical grounds, for these experiments, while they do not support the extravagant claims of those who hold that the process is one that bids fair to revolutionize the agricultural world, and that its product is an all-sufficient and perfect food, certainly show that it is one well deserving of many further trials by practical farmers.

Silk Manufacture in the United States.

Silk culture in this country was almost strangled in its infancy, by the wild and unwarranted speculation in a variety of the Mulberry. Just now there is an awakening interest in the subject in some places—though the efforts are as yet confined to a small number of persons. There is no doubt that we have the proper soils and climates in some parts of our wide territory, which embraces almost every variety. As with Tea-culture, the question will very much depend upon the price of labor. In Italy and France, where a large portion of the raw material for silk—the cocoon—is produced, the wages paid to agricultural laborers range as follows:—

Daily Wages in	*France.*	*in Italy.*
Men without board and lodging	$52\frac{1}{2}$ cts.	$58\frac{1}{3}$ cts.
Men with board and lodging	$22\frac{2}{3}$ "	30 "
Women without board and lodging	$18\frac{1}{3}$ "	26 "
Women with board and lodging		$10\frac{1}{3}$ "

In 1874 we saw, in Naples, many women carrying earth in baskets from a cellar being excavated for a large hotel, whose daily wages, without board or lodging, were from 90 centimes to 1 lire a day in paper money, or 15 to 17 cents a day. But Italy is now advancing rapidly in prosperity, and the wages of all classes are increasing.

It will surprise most people who have not looked into the subject, to learn how greatly the manufacture of silk has increased in this country within a very few years. In 1850 the total manufactures of silk in the United States amounted to less than two million dollars ($1,809,476); in 1860 they rose to only $6,607,771; in 1870, to a little over twelve millions; while the census of 1880 reports over thirty-four million dollars ($34,519,723), with 31,000 workers, who received over $9,000,000 in wages. This amounted to over 40 per cent of the $85,000,000 worth of the home-produced and imported silk consumed in this country. Paterson, N. J., alone stands credited with $13,306,672 of silk manufactures, and employed 12,599 persons in this industry, who received $4,066,990 in wages. It is reported that about 15,000 persons are now thus employed there.

To produce the thirty-four and a half million dollars worth of manufactured silk, we imported a little over twelve million dollars worth of raw silk, all of which, it is claimed by the enthusiastic promoters of silk culture, may soon be grown here, despite the difference in wages. This is the present most interesting practical question in production.

WHAT ARTICLES OF SILK are made in this country is given in the following table of the values of each variety of fabric, etc., in 1880.

Ribbons	$6,023,100
Machine Twist	6,007,775
Dress Goods	4,950,275
Handkerchiefs	3,881,590
Cord, tassels, passementerie (gimp, etc.), and millinery trimmings	1,866.575
Upholstery and military trimmings	1,392,355
Satins	1,101.875
Braids and Bindings	999,685
Millinery Silks	891,955
Sewing Silk	776,120
Broad Goods not named above	627,595
Tie Silks and scarfs	606,675
Mixed Goods and silk values therein	510,763
Silk Laces	437,000
Floss Silk	225,025
Undertakers, Hatters, and fur trimmings	59,805
Coach Laces and carriage trimmings	37,510
	$34,510,843

Wooden Stable Floor.

BY L. D. SNOOK, YATES CO., N. Y.

It is not my purpose to discuss the advantage or disadvantage of a wooden floor for a horse stable, but to give a few hints on constructing the same. Elm makes an excellent and durable stable floor; the fiber of the wood is tough and yielding. The planks should be secured in position by wooden pins, as they are constantly liable to warp. Any of the soft oaks makes a good floor; the hard, tough varieties are unyielding, and until they

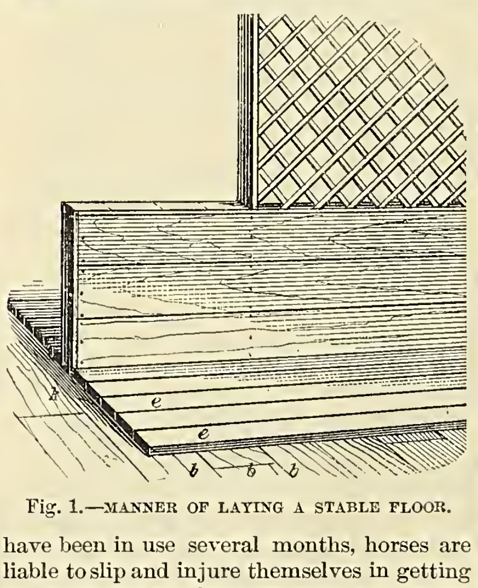


Fig. 1.—MANNER OF LAYING A STABLE FLOOR.

have been in use several months, horses are liable to slip and injure themselves in getting up. Both pine and hemlock make good floors, being soft and yielding, but they are not as durable as many other woods. Planks for a stable floor should be two and a half inches in thickness, and not laid until quite thoroughly seasoned, and then always put down lengthwise of the stall, and upon another floor laid crosswise, as shown at *b*, *b*, *b*, fig. 1. The planks of this floor, or cross floor, should be laid one inch apart, that they may the

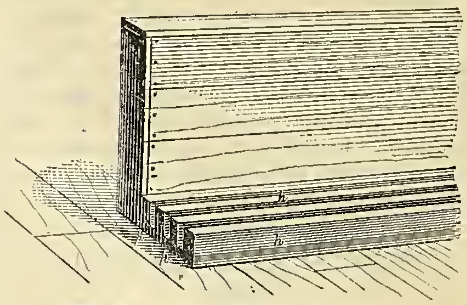


Fig. 2.—A SLATTED STABLE FLOOR.

more readily dry off, and offer a better ventilation to the floor above. Unless the upper floor is of material liable to warp, it should not be nailed or pinned, but made as close-fitting as possible. It is not profitable or necessary to have the stall planks more than $11\frac{1}{2}$ feet in length, or extend farther back than the stall partition, as shown at *e*, *e*.

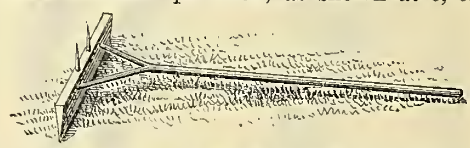


Fig. 3.—A CLEANER FOR SLATTED FLOOR.

This plan leaves a wide smooth walk behind the stalls at *k*, so necessary for ease and rapidity in cleaning the manure from the stable.

Some horse-keepers prefer a slatted floor, similar to that shown in fig. 2. Material of the proper length, 4 inches wide and 2 inches thick, is set upon edge, as at *h*, with a strip $\frac{3}{4}$ inch thick and $1\frac{1}{2}$ inch wide placed between the slats, the whole made to fit the stall as closely as possible. By this method it is quite impossible for horses to become so dirty as when lying upon a common plank floor, as the space between the slats forms a most admirable channel for carrying off the urine. A few days' constant use somewhat clogs the passages, but they are readily opened by using a home-made cleaner, like that shown in fig. 3. Stable floors should have at least one inch descent in ten feet, and many make the descent three and even four inches in the same distance, but this is unnecessary. All stabled animals should stand upon floors as nearly level as is consistent with cleanliness.

Jersey Cattle.—For family cows, and butter makers, the Jerseys stand high among intelligent dairymen. They are working their way into the rural districts, and Jersey grades are now quite common in all the older States, and the more numerous in the better dairy regions. The true policy in every butter making district is to propagate the stock from a registered bull of good butter pedigree. An investment of one to three hundred dollars, is not beyond the means of any thrifty farmer, or of a farmer's club, in any community. The fifty or more calves that such a bull would sire in a season, would soon affect the butter production, and the prices, and in many ways stimulate agricultural improvement. Half and three-quarter Jersey grades, often give a rich milk, and in larger quantity, than the registered animals. If after "gilt-edged" butter, or a good family cow, a Jersey is pretty sure to give satisfaction.

The Swine of Ten States.

BY F. D. COBURN, TOPEKA, KANSAS.

Of the thirty-five to forty million hogs in the United States, three-fifths are raised in ten strictly Mississippi Valley States, viz :—Illinois, Iowa, Missouri, Indiana, Ohio, Kentucky, Tennessee, Kansas, Nebraska and Wisconsin. These States produce annually nearly three-fourths of the entire corn crop of the country. Fifteen years ago the great bulk of hogs grown in these States were white, or white color predominated, and little attention had been paid to their improvement, except to breed from the best of common stock of easy access in any particular neighborhood. But within this period of 15 years almost a revolution has taken place in breeding, quality, and color. Now comparatively few are raised which are not improved and approved breeds or their crosses, giving more compact forms, earlier maturity, easier fattening on less feed, and a large increase of valuable product from the gross live weight. Instead of being mostly white, eighty-five to ninety per cent of the hogs are now black or nearly so, and the two breeds that, pure and in their crosses, furnish the most of these swine are the "Poland-Chinas," an established breed that originated in the Mississippi Valley, and the "Berkshires," imported from England. There is here and there an occasional Essex Pig, also an English breed—the only other black one we have. The present white hogs are the descendants of the old common stock of that color, crossed more generally with the Chester Whites, of Pennsylvania, and to some extent with the English Yorkshires or Suffolks, which are small, and sustain the same relation to Chesters and other large white hogs, that the small Essex do to the invariably dark-colored Poland-Chinas and Berkshires.

Mr. Sherman, Superintendent of the Union Stock-Yards at Chicago, where more hogs are handled each year than at any other one point in the world, has recently stated to the writer that nine-tenths of all the hogs passing through these yards during the last three years were of the dark breeds.—The Superintendent of the Kansas City Stock-yards, where more than a million hogs were cared for in 1881, says that ten years ago half the hogs arriving there were white, while now ninety-three out of a hundred are black.—At the Kansas City Exposition of last year, no white hogs were shown, and at the two State Fairs in Kansas, at each of which some three hundred head were exhibited, there was but one white hog. An unusual degree of popularity enjoyed by one of the two leading breeds in any locality is offset by the same partiality for the other somewhere else. Each person who raises either one in its purity has full faith in its being good enough, and those who cross the two are confident the product is an improvement, in some respects, on either of its ancestral breeds.

In somewhat the same ratio that dark hogs have increased in popularity, there have developed improved methods of care and feeding, as well as breeding. But a few years ago Indian corn was considered by most farmers the cheapest, best, and about the only food specially desirable for either the growing pig or the fattening hog; now it is quite generally admitted that the hog is, to a large extent, a grazing animal, that thrives on grass, and makes a healthy rapid growth on various roots that are produced in large quantities easily and cheaply. Of the latter, artichokes and beets are good examples; and of the former, clover, alfalfa, and blue-grass.

THE PIG IN CLOVER AND ALFALFA.—The clovers have already come to be highly esteemed for swine, and Alfalfa is likely to soon become a prominent subject of experiment and inquiry in the same direction, according to the statements of those who know it best. Prof. Shelton, of the Kansas Agricultural College, has experimented with it since 1875, and does not now hesitate to say that one acre of Alfalfa is worth as much for hogs as five acres of Artichokes; that it furnished two or three times the amount of food that clover or blue-grass does, and will endure drouth better than any other crop, "not excepting white oak timber."—With its natural advantages, its rapidly developing resources, and improving methods, the Valley of "The Father of Waters" is likely in the future to furnish, of a better quality and for less money, the pork to feed the nations and the lard to lubricate their throats and machinery, than any other portion of the globe.

Mistakes will need to be guarded against, and one now apparently most imminent is a too close breeding, and especially from parents with constitutions degenerated by high keeping and the continued "refining," that within certain bounds has proved so beneficial. To assist in counteracting such an evil, and give an out-cross that will impart new vigor and stamina, some of the less known breeds—such as the Durocs or Jersey Reds—may in time answer a valuable purpose. Some of these various named, rust-colored hogs, are claimed as extremely hardy, and for crossing purposes may prove a valuable acquisition. In the hog family, as in the human, too much idleness and too long-continued high-keeping entails evil consequences.

Southern Pastures and Pasturage.

BY G. C. SWALLOW, PROFESSOR OF AGRICULTURE, MISSOURI UNIVERSITY.

The leading field crops of the South-west, which comprises Missouri, Kansas, Arkansas, Texas, and Louisiana are :—Herbage, Forage, Corn, Wheat, Oats, Rye, Barley, Rice, Buckwheat, Sugar and Molasses, Potatoes, Artichokes, Pumpkins, Cotton, Hemp, Flax, Tobacco, Hops, Castor Bean, and Broom-Corn.

Herbage, including all cultivated and wild plants upon which domestic animals feed in pastures, prairies, and forests, is by far the most abundant and valuable of all the productions of the South-west. It constitutes at least two-thirds of all the food of cattle, horses, mules, sheep and goats, and one-half of what is eaten by swine. Down to the present time these States have, for the most part, depended upon native grasses and other wild plants for the summer and winter grazing of domestic animals. The amount of forage and grain fed, is comparatively small. Our native grasses of the prairies and open forests (Oak Openings), are as nourishing as the cultivated grasses of the older States, as grown in open and woodland pastures. And besides, the pea-vines and cane cover large areas of the timbered bottoms or alluvial lands, with the best possible winter pastures.

Before these native pastures were overstocked, no better range could be found for cattle, horses, mules, sheep, goats, and swine. The prairies, which occupied fully one-half the area of these States, with their grasses so luxuriant as to hide the grazing herds, the deer and buffalo, were the best possible summer pastures; and the forests with their rank growth of pea-vines and cane, were the very best winter pastures. In these natural pastures the stock does as well as by the ordinary mode of grazing and feeding in the older and Eastern States. The mast and other fruits are an important item in this mode of raising stock. Vast numbers of cattle, horses, and sheep have been raised on these native pastures of the South-west, and for the last twenty years the largest amount of beef made upon herbage was driven from this region to our Eastern and Southern markets.

These natural pastures are not so productive as in years past. While large portions of Kansas and Texas still feed immense herds on their vast prairies, the older States find it necessary to resort to artificial means to keep up the needed supply of herbage.

Much inquiry and many experiments have been made to determine the best herbage plants for the improvement of our pastures. In Missouri and Eastern Kansas the Kentucky Blue-grass is the best for improving the pastures of those regions. This grass quickly spreads over the prairies when they are closely grazed, and over the timber when brushed-out and opened as woodland pasture; and this process is greatly accelerated by sowing the seed. Blue-grass furnishes a hardy and rapid growth of nourishing herbage grateful to all graminivorous animals. The largest and best cattle, horses, mules, sheep, and swine are raised almost exclusively on this grass. It starts early in the spring, grows rapidly in the summer, and makes the best winter pastures, when not grazed too close in summer and autumn. Clover is extensively used for summer pastures, and Rye to some extent for the winter. Timothy, Red-top, and other grasses are used to improve pastures of the northern part of this region.

In Texas and the adjacent regions of the South, several native grasses are relied upon for the improvement of pastures. Herbage plants, under the names of Wild Oats, Wild Rye, Wheat-grass, Winter-grass, Gamma-grass, Bermuda-grass, Colorado-grass, Mesquite-grass, make most excellent pastures for cattle, horses, sheep, and swine. Some of these grasses promise to make the very best herbage for permanent pastures. The Mesquite-grass is said to be fully equal to the Blue-grass for permanent grazing. The Winter-grass has no superior for winter pastures in the prairie regions. In Southern Missouri, Arkansas, Texas, and Louisiana, cane-brakes fenced in and protected, make the best winter pastures, and may doubtless be made permanent by proper management.

But as to what are the best plants for pastures, and what the best culture for them, are still open questions for the South-west, and it is expected future experiments will lead to much-needed improvement in this department of husbandry. As the country settles up, this question of herbage for the vast quantities of stock will assume more and more importance, and force upon us a more improved system of pasture culture. Fully two-thirds of all the food consumed by the cattle, horses, mules, sheep, and goats, and fully one-half of that eaten by swine, is obtained by grazing; and no other mode of feeding, now known, can be substituted for the cheap production of meat and work stock.

A Pernicious Weed—Bind-Weed.

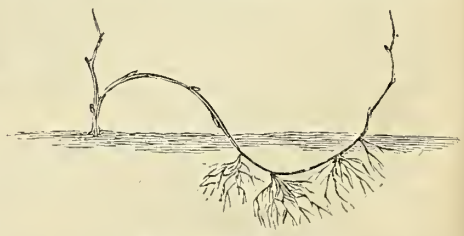
Some weeds are so unattractive in appearance, that they are at once regarded with suspicion and exterminated. But with weeds, we cannot always judge by appearances; some are pleasing in foliage, and even beautiful in flower, while their root is working unseen mischief. The Bind-weed (*Convolvulus arvensis*), as our engraving, of nearly the natural size, shows, is a miniature Morning-glory, and also a really handsome little plant. It has long been known in England as one of the most troublesome weeds. It was mentioned in "American Weeds and Useful Plants" (1859), as a plant from which trouble might be expected. The anticipated trouble has now begun; within a short time we have had complaints from a farmer in Connecticut that it is in his meadows; we have heard of it on the banks of the Hudson, and one of the editors of the *American Agriculturist* has discovered that in setting a new strawberry bed, he also introduced this with his strawberry plants. At the police head-quarters, when they catch a suspected person, he is made to sit for his portrait, and if unable to prove anything against him, they let him go, and his picture goes into the "Rogue's Gallery" for future reference. We can prove something against this plant, but we give its portrait in order that it may be recognized on its *first appearance*. Herein consists the most important part of the fight with weeds: Knowing the enemy at first sight, and attacking at once, while in a weak condition, and preventing its spread. The first thing to be done, when the Bind-weed is recognized, as it surely will be when it flowers, is to prevent any of those flowers from producing seeds—cut and burn, and one source of mischief will be stopped. Then the established plant is to be attacked, and we should say that its stems, 3 feet or more long, run upon whatever plants may be near, and by twining around grain, etc., gets the name, Bind-weed; in England it is also called "Corn-bind" and "With-wind." It is amusing to read some of the accounts of this plant written in England half a century ago, apparently to show that it cannot be exterminated. Now we do not believe that there is a plant, or ever will be one, which, by thorough, frequent and persistent cutting, may not be exterminated. The trouble is, that the work is but half done. We have positive knowledge of the successful fighting of a vastly worse weed than this—but the fight was earnest. If this weed appears, and is established, cut it once a week—every day—every hour—or—as often as may be needed to keep down *all* stem and leaf growth, if it requires a man to stand over it all the time, and the plant *must* die. There can be no increase of the plant without leaves; keep off the leaves. It takes longer to subdue some plants than others, but *it will succeed* just as certainly as a garrison may in time be starved out, by cutting off all supplies from without. With plants the supply can only come from the leaves.

THE BIND-WEED (*Convolvulus arvensis*).

More Feed Wanted for Cows.—It is reported of that extraordinary milker, "The Queen of Barnet," that she made 746 pounds of butter in a year, and that her daily rations were four quarts of bran, four quarts of ground oats, three quarts of corn meal, eight quarts of carrots, and all the good hay she could eat. The yield of butter is at least four times the average of good dairy herds, who have merely good hay in winter, and good pasture in summer. What is extra in the feed of this cow, is the bran, oat meal, corn meal, and carrots, worth on the farm where they are raised, about 20 cents daily. This extra feed for a year is not far from $73. The extra amount of butter would be 560 lbs., worth at one-third of a dollar a pound, $186. Deducting cost of extra feed, $73, it would leave $113, as the profit of high feeding. Very few cows on our farms are full fed, especially in winter, and the impression is so general, that it will not pay to do it, that it is very difficult to get farmers to make experiments in this direction. Steel-yards are cheap, and the rations above noticed are within the reach of most dairy farmers. Try the experiment of extra feed on one of your best butter cows, and see the result.

Layering the Grape-Vine.

While many varieties of the grape will grow readily from cuttings planted in the open ground, others need to be placed in a propagating house, where they can have bottom heat, and a few varieties can hardly be grown from cuttings at all, but must be layered. Layering consists in burying a portion of a cane in the soil, in order that it may strike root while it is yet attached to the parent vine; when a sufficient number of roots have formed, it is cut away from the old vine and set out as an independent plant. This method is of necessity employed by the nurseryman for those varieties that will not readily grow from cuttings, and it offers to the amateur the most certain means for the propagation of all vines, as he does not care to multiply them in large numbers. The best method of layering is to use in early spring a cane that grew and ripened the previous season; but the time for this has now gone by, and if one has a vine from which he wishes to obtain a new plant or two, he can do it by layering the shoots of the present season's growth. The shoots for this purpose should be those which start near the base of the vine, which have been allowed to grow for the purpose. They will usually be hard enough by mid-summer, for if layered when too soft and green, they might decay. Having ascertained, by extending the shoot, the best place for burying a portion of it, dig a hole with the spade, and carefully bend the shoot, in order that a part of it may be buried to the depth of six inches or more, cutting away all the leaves from the buried portion. Press the earth firmly down over the stem, and tie the portion which extends above ground to a stake. It is well to put a mulch of some kind over the layered portion; litter will answer, but there is nothing more effective to retain the moisture than a few flat stones. Usually abundant roots will be formed by autumn, when the new plant may be severed from the old one, or it may be left until early the following spring. The engraving shows the layer in autumn, after the leaves have fallen. In severing the new plant from the old one, take care to cut it in such a manner as to leave all the roots attached to the layer. Layering allows one to readily propagate a large variety of plants. The grape-vine roots so readily that it is not necessary to "tongue" it, in order to induce roots to form,



A GRAPE-VINE LAYERED.

but with hard-wooded shrubs generally, it is necessary to cut the layered portion about half-way through, with a long sloping cut, to form what is called a tongue, and this is best done on the upper side of the layer, instead of on the lower, as is usually advised.

The Culture of Saffron and other Drugs.

Every now and then there is an excitement concerning unusual crops—the "Multicaulis craze" on a small scale over again. Many of our readers may recollect the "Coffee plant," which was to allow every farmer to grow his own coffee, and have an abundance to sell. No doubt the one who sold the seeds of the Chick Pea at a large price for a small packet, found the "Coffee plant" profitable. Where is it now? About a dozen years ago excitement prevailed all along the line over Opium culture. A person in Vermont had raised the poppy, and collected Opium. The same man sent a sample of opium to a Philadelphia chemist, who certified that the sample contained even more Morphia than the best imported opium, and many were the inquiries from those who would at once go into poppy growing, and opium gathering. Sometimes the best cure for such a craze is, not to oppose it, but to give the details of the particular culture. Of course, the production of opium here and there in a small way, was no new thing, and knowing that one of our friends in Wisconsin had been successful in it, he at our request gave the process in full, from sowing the poppy, to collecting the minute yield. Every necessary step was given, and every operation that he described was necessary to success. Probably every farmer who read these clearly described details, was at once cured of all desire to cultivate opium. So far as we are aware, the only one who made any money out of opium culture was the Vermont man, who sold seeds of the "Genuine Opium Poppy," (kept at all seed stores), and a book of directions.

Just now there are inquiries about Saffron. Some one has ascertained that the wholesale price of Saffron is $15 or more per pound. He knows that the plant will grow in this country, for 50 years ago his grand-mother

THE SAFFLOWER (*Carthamus tinctorius*).

used to have it in her garden, and collected the Saffron. Now he would know where the seeds can be had, about the cultivation, etc. It is quite likely that an article has appeared in some paper, setting forth the probable profits of Saffron culture. Though we have not yet seen it, but these unusual inquiries are generally to be traced to such a source. Saffron *is* worth $15 per pound, and our inquirer is right in the fact that his grand-mother used to collect saffron. But *this* Saffron, is not *that* Saffron. There is Saffron and Saffron, the one being $15, and the other $0.50 per lb.

The plant to which the correspondent refers, though usually called Saffron, is more properly Safflower. Its botanical name is *Carthamus tinctorius*. It is closely related to the Thistles, and may be described as a thistle-like plant, a foot or two high, with smooth, but prickly leaves, and heads of dark orange-colored flowers. It is an annual, and its seeds may be had at the seed-stores. The plant has been cultivated in Eastern countries so long, that its native place is unknown. Formerly it was used in immense quantities as a dye, and the commerce in it has been large. A few generations ago it was usual to devote a part of the garden to those medicinal plants in common use, and Safflower had a place with Balm, Rosemary, Rue, and others, which were duly cut, and hung in the garret to dry, for use "in case of sickness." Who does not remember the odor of the old garret? As to the Safflower, or "Saffron," the flowers were pulled from the heads, dried, and put away in papers. They are not regarded as having any medicinal qualities, but some years ago a family was regarded as poorly prepared for measles without them. So much for that "Saffron." The other, or *real* Saffron, is a peculiar product, and is obtained from a species of Crocus (*C. sativus*), which, as the engraving shows, is much like the common spring crocuses of the garden, but it blooms in autumn. It is supposed to be a native of Asia Minor, but has become naturalized in most European countries; it is sometimes seen in cultivation in our gardens. Like other crocuses, this has a long style, the ovary being down below ground, and divides at the top to form three stigmas, as shown separate in the engraving. It is this part which forms the true Saffron. The flowers are gathered in the morning, these stigmas separated, and the rest of the flower thrown away; they are dried on paper, and sent to market loose, or are pressed to form cakes. It has been found that it takes 4,320 flowers to yield stigmas enough to make one *ounce* of Saffron—of course 16 times as many to make a pound, and our inquiring friend may consider, whether, if he had the plants all cultivated to his hand, he could afford to do the collecting of these stigmas even at what seems to be the high price of $15 per lb.

One may say of the true Saffron, that while in early times it was supposed to have valuable medicinal properties, it is now used only for coloring and flavoring some medicinal compounds, and for this purpose the demand is much less than formerly. We gladly enough encourage every culture that promises profitable results, but there are many, like that of Opium and Saffron, that we know must end in failure, whatever may be the price of the product, and we feel that we do our readers a good service in showing them the facts upon which our belief is founded.

THE TRUE SAFFRON (*Crocus sativus*).

Planting the Celery.

Probably no gardening operation has been more thoroughly revolutionized within a few years than the growing of Celery. Some fifteen years ago, Celery was a rarity in the family garden; it was supposed to take so much labor in the making and proper manuring of trenches, that few besides the wealthy, who could afford a "gardener," undertook its culture. Now, especially owing to the teachings of the *American Agriculturist*, it is found that it is quite as easy to grow Celery as it is to grow cabbages, and the method which has been found practicable in market gardens, is now followed in the private garden. The great step in advance in Celery culture was, to abandon the English method of planting it at the bottom of a trench, and to cultivate the plants upon level ground. The planting in the Northern States is usually done this month. Those who grow Celery largely will have the plants at hand in the seed-bed, but those who cultivate but a small quantity, find it

cheaper to buy the plants, which are offered by seedsmen generally, during the present month. The bed for Celery should be well prepared by spading in an abundance of well-decomposed manure. Market gardeners plant the crop upon land that has been heavily manured for early cabbages, cauliflowers, onions, etc. But whether the manure has been applied for a previous crop or not, the soil should be very rich, and if the manure is now applied, it should be well incorporated with the soil. The plants are set in rows 4 feet apart and 6 inches distant in the rows. The line being stretched, it is to be beaten gently with the spade, in order to leave a mark on the soil to serve as a guide in planting. While cabbage and some other plants should be set deeper than they were in the seed-bed, this is not the case with Celery, which forms no distinct stem, and in transplanting should be set no deeper than it was before. If the transplanting can be done in a moist time, all the better; but if it must be done when the soil is dry, an abundant watering of the plants soon after setting will be of great service. All plants, when transplanted, should have the soil well pressed around the roots. Celery, especially, needs attention to this "firming," as the gardeners term it; if this has been properly done, very few plants will fail; still it is well to have a few plants in reserve, to supply any deficiencies that may occur in the rows. After the Celery is planted, there is nothing to be done to the crop for the next two months except to encourage the growth by frequent hoeing, which will remove such weeds as may start, and keep the soil light and open.

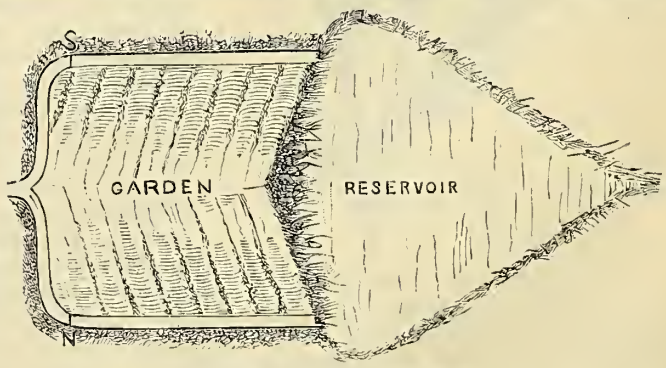
A FINE NARCISSUS (*Narcissus bicolor Horsfaldii*).

A Beautiful Narcissus.

Our flower growers do not, as a general thing, give the attention to the plants classed as "bulbs," that they deserve. They purchase of the dealers in autumn, Hyacinths, Jonquils, Narcissus, etc., without much regard to the kinds. The genus Narcissus, for example, in its several species and hybrids, offers a great variety of beautiful flowers, and is worthy of special attention. Some of them make charming plants for forcing. What for example can be more pleasing as a green-house decoration, than the old, though by no means common, Hoop-petticoat Narcissus (*Narcissus bulbocodium*)? A pot containing half a dozen of these little bulbs, makes a bright spot in the green-house, and one that retains its beauty for a long time. It is also excellent as a window plant; the bulbs are to be potted and kept in the cellar, until they form abundant roots; they may then be brought into the warmest and lightest place in the window, and will soon show their bright and delicate flowers. Among the species of Narcissus, the two colored (*N. bicolor*), has long been a favorite, and within a few years, a variety called *Horsfaldii*, has been introduced, which is far superior to the old form in size and coloring. Having procured some bulbs last autumn, on account of the great praise given it in the European journals, we awaited its blooming this spring with no little interest, and were not disappointed. The flower is really fine; the engraving from one of these, shows the large size of its crown. The petals are of a rich creamy white, while the large and handsomely fringed or scollopped crown, is what may be termed a bright lemon-color. We have no doubt that this fine variety of Narcissus will be a splendid plant for forcing, the large size of its flower especially commending it for this purpose. The foliage is ample, but there is nothing peculiar about it.

Irrigation in the Garden.

Every one who has thought about the matter, is aware that the great necessity of our horticulture is irrigation. What fruit growers and vegetable raisers need more than anything else, is to be insured against loss from the severe drouths which, in our uncertain climate, may ruin their crops outright, or so diminish them that they are unprofitable. Every strawberry grower of experience has known seasons in which adequate watering at the right time would have given him an abundant crop. The saving of a single crop of strawberries will often warrant a considerable outlay for irrigating improvements, which, when once made, will last for many years. In those States where an annual drouth may be depended upon, irrigation is accepted as a matter of course, and is provided for. We have no doubt that, in the near future, irrigation will be regarded as a necessity in profitable gardening in all parts of the country, and those who soonest adopt it will reap the greatest profit. In selecting a new location for a market or a fruit garden, the possibilities of irrigating it should be considered. In most established gardens, some method may be found for the introduction of water, either from a stream not far distant, or by establishing artificial reservoirs. As an example of what may be done, we give the experience of A. D. Lee, Linn Co., Kansas, with a plan from a sketch sent by him. Mr. L. says: "In order to procure water for our stock, we built a dam across a little valley which drains a pasture of about ten acres. White willows were planted to support the dam or embankment. The reservoir covers about half an acre; the water, which is about ten feet deep, remains perfectly clear all summer, and is well stocked with fish. Our garden, of about an acre of rich loam, is located just below the dam. Two canals, *N* and *S*, are provided to carry off the water in case of an overflow. By means of little gates at *N* and *S*, these canals can at any time be filled with water, which may be guided between the rows as needed. The sketch shows the arrangement at a glance. This garden, last summer, fairly laughed at the drouth, which completely destroyed the garden crops in the county—such lettuce, peas, beans, cabbages, etc.! We went into winter quarters with the most luxuriant strawberry-bed I ever saw in any State, while the plants of our neighbors were nearly all destroyed by the drouth. I would not try to have a garden again without water." The experience of Mr. Lee accords with that of all who have irrigated their gardens. Of course the great point is a supply of water; and while all places will not allow of the construction of a reservoir like this, such localities are more common than is generally supposed. In the absence of other supply of water, it may be raised from a well by a pump operated by a windmill, and stored in a wooden tank or in a cemented cistern, made in elevated ground. In irrigation an abundant supply of water is given, and the soil moistened to a great depth. The nourishment thus given to the plants is not the only advantage to be derived from this method. Many of our most destructive insects pass a portion of their existence either in the larval or chrysalis state in the soil; its saturation by irrigation is one of the most effective means of destroying them, and this of itself would go far to pay the cost of arranging means of irrigation.



PLAN OF AN IRRIGATED GARDEN.

Insect Enemies of the Currant and Gooseberry.

Few are aware of the importance of the Currant and Gooseberry crop. In some localities, not far from New York City, notably in Connecticut in one direction, and on the banks of the Hudson in another, large areas are devoted to these berries, especially to the Currant. The Gooseberry, always of some of the native kinds, is marketed green, while the Currant, to some extent, marketed unripe, is generally offered in the ripe, or fairly colored state. The grower of the Currant has a great advantage over those who send the Strawberry and Raspberry to market, in the fact that the fruit is not readily perishable; if not sold to-day, it may be to-morrow, and will keep, if need be, for several days. In some neighborhoods in Connecticut, the Currant has for many years been an important crop. As is usually the case, when a plant is grown largely in a locality, various insects find it out, and success in Currant culture largely depends upon

Fig. 1.—THE GOOSEBERRY SPAN-WORM (*Eufitchia ribearia*).

a successful war against insects. Growers talk about *the* Currant-worm, while entomologists recognize several, at least three, which attack the crop, either one of which may be destructive in eastern or western localities. One of these insects, which, as it prefers the Gooseberry to the Currant, though it often attacks the latter, is the Gooseberry Span-worm (*Eufitchia ribearia*). This worm is the larval state of a small native moth. It was thought by Dr. Fitch, who first noticed it, to belong to the same genus with the European insect, and he described it as a species of the same genus (*Abraxas*); but Dr. Packard, finding that it belonged to a different genus, has described it anew, and named it, in honor of its discoverer, *Eufitchia ribearia*. It differs from all other insects upon our Currants and Gooseberries, in being what is known as a "Measuring" or "Span-worm," on account of its method of travelling by loops. When the worm is alarmed, it at once lets itself down by a thread, and hangs thus for awhile. This habit may be taken advantage of to destroy it while the worms are still young; the bushes may be jarred by means of a forked stick, and the stick may be used to pass along just above the suspended worms, to bring them to the ground, where they may be crushed. This insect is a native, and the pupa as well as the moth and the larva are shown in fig. 1.

When *the* Currant-worm is mentioned in the Eastern States, probably the Imported Currant-worm is referred to, as it is this which has proved to be the most serious pest to the Eastern Currant grower. It does its mischief in the larval or "worm" state, but the perfect insect, instead of being, as in the preceding, a moth, is a Saw-fly. The perfect insect is shown in fig. 2; the male, *a*, being much smaller, as well as unlike in appearance to the female, *b*. The larva is shown in fig. 3, *b* representing the characteristic dots upon one of the rings, much enlarged. The eggs of this are laid by the insect, which comes out of the ground in early spring, upon the underside of the lowermost leaves of the bush, usually near the larger veins. The young worms, as soon as hatched, feed upon the leaves, riddling them with holes, and when full grown and about three-quarters of an inch long, drop to the ground, and under the fallen leaves, or just below the surface, they form cocoons, from which, in the course of a few weeks, the perfect insects appear, usually early in July, to lay eggs and repeat the same destructive round. Their second brood enters the pupa state, and remains in this condition until the following spring. This insect, when it has established itself, is most destructive, and were it not for an effective remedy, Currant culture would be almost impossible. Fortunately there is for this Currant-worm, and for all others that prey upon the leaves of the plants, a most efficient remedy in powdered White Hellebore. Some journals have mentioned the use of Hellebore, without specifying the kind. *White* Hellebore (*Veratrum album*) is the kind, and not Black Hellebore (*Helleborus niger*), which is a very different plant, and can not be substituted for the White. As poisoning the Colorado-beetle has become a regular part of potato culture, so the poisoning of the Currant-worms must be a regular thing in Currant and Gooseberry culture. It is a very common sight to see Currant bushes denuded of every leaf, and the half-grown fruit drying upon the naked bushes. This could have been prevented, no matter by which of several insects it was caused, by the timely use of White Hellebore. The powder, as sold at the drug stores, is greenish-yellow, and if accidentally taken into the nostrils, causes the most violent sneezing. Some advise the dusting of the powder upon the leaves, but this, aside from the inconvenience caused by its entering the nostrils, is not the best way to employ it. For several years we have used the following: Place a heaping tablespoonful of the powder in a bowl or basin that will hold a quart or more; gradually add to this, boiling water, stirring constantly until every particle of the powder is thoroughly wetted, gradually adding more water, and stirring until a quart or so has been added; turn this into a pailful of cold water, stir well, and apply to the bushes. The application may be made with any kind of garden engine or syringe,

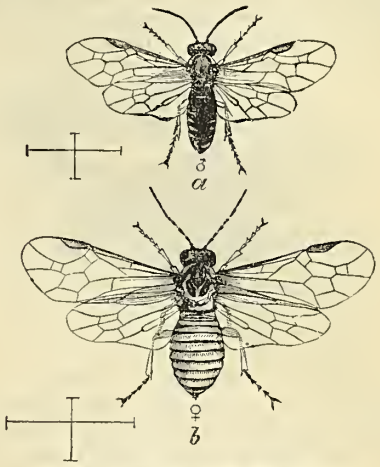


Fig. 2.—THE CURRANT WORM FLY.

or even with a watering-pot, the object being to thoroughly wet the leaves. If at the end of a week or less any worms are found to have escaped, a second application must be made. Rarely are more than two applications needed; if a second brood appears, it should be treated in the same manner. But, "Is not Hellebore poisonous?" will be asked. It is poisonous, but there is no danger from this use of it. The rains will wash off all that may adhere to the berries; if there have been no rains, any of the powder adhering to the berries will be seen, and in preparing the currants for the table, such fruit will be rejected as soiled.

Besides the insects that attack the leaves, there is a borer, also imported, which injures the stem. The parent insect, of the same genus as the Peach-borer, lays her eggs singly near a bud, and the young larva makes its way directly to the center of the stem, feeding on its pith and causing much injury. The diminished growth will show that there is trouble, even if the weakened stem does

Fig. 3.—THE IMPORTED CURRANT WORM.

not break away. In the fall pruning, all such stems may be readily detected, and should be cut off and burned. Some advise growing the currant bush in the form of a tree, with a single stem. Were it not for the borer it would be advisable to adopt this manner of training. When there is but one stem, the borer is quite sure to attack it sooner or later, and make an end of the plant.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

Folding Table for Porch.

Last summer we found our folding table on the kitchen porch, even more convenient than we anticipated when it was first put up. Various kinds of work, such as preparing vegetables and fruit,

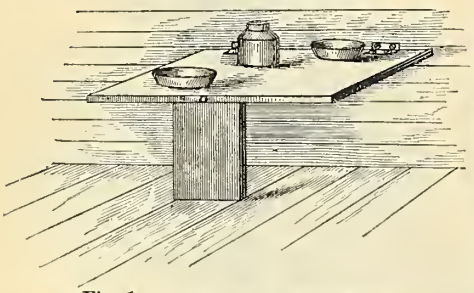


Fig. 1.—THE TABLE IN POSITION.

ironing, and the sometimes necessary scouring of tin things, can be done as well on a shady protected porch, as in the kitchen, and with much more comfort, for it affords a pleasant retreat from the heat of the indispensable cooking stove. The table (fig. 1) is made of pine, 3 feet long, by 2½ feet wide. The top is firmly fastened to the wall by two strong hinges. The support in front is nearly a foot wide, fastened on with a large hinge, so when the table is in use, it is under the top, and even with the front edge. When not in use, the table is hooked up against the house wall, as shown in figure 2, and is entirely out of the way. Such a table might also be found very convenient in a small kitchen, as it could be let down when any extra work required a second table, and be easily put back when not required. Any one who has not yet the desirable addition of a back porch to the house, will find a folding table put up against the side of the house near the kitchen door, if on the shaded side, very useful in pleasant weather.

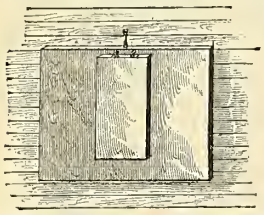


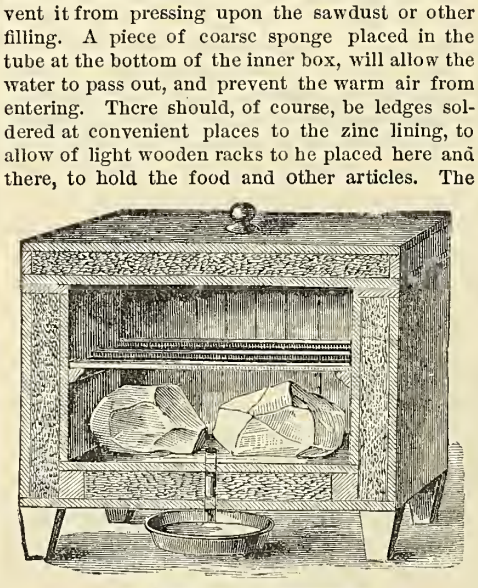
Fig. 2.—THE TABLE FOLDED.

A Drink for the Harvest Field.

One who travels in the sparsely settled portions of Northern Mexico, is quite sure to make the acquaintance of *Pinole* (pronounced *Pee-no-lee*). Those who go on long journeys on horseback, and herders of cattle, who may be weeks absent from their homes, are sure to have a supply of Pinole. It forms one of the principal rations of the Mexican soldiers on the frontier. The chief business of these is fighting Indians; they have no baggage-wagons, but each soldier carries his rations for many days upon his horse, and these are mainly sun-dried beef and Pinole. Having often found Pinole most acceptable on a long journey, it has occurred to us that it would be an excellent thing in the harvest field, or wherever a refreshing drink was required by those who need food rather than stimulants. It is often advised to use in the harvest field oat-meal stirred in water, and this is no doubt good, but Pinole is better. But let us state what Pinole is. Indian corn is parched, not popped, but thoroughly roasted quite through, and in doing this it should be carefully stirred, so that it will become equally and but slightly browned. This is then ground about as fine as Indian-meal, and mixed with sufficient sugar to suit the taste. It is usually flavored with cinnamon or other spices. When a tablespoonful of this Pinole is stirred in a cup of cold water, it is not only acceptable to the taste, but is really nutritious, and one can travel for a long time upon this alone. The corn is thoroughly cooked, and is as useful a food as if made into bread. It is usually employed in this manner as a drink, but we have known it to be merely moistened, to make a sort of pudding, and eaten in that manner. One of the finest exhibitions of hospitality we ever met with was on the Mexican frontier. Seeing a cattle herder's hut, we rode up to inquire the way; the occupants of the hut, an old man and his old wife, were at dinner. They were squatted on the ground floor of the hut; their table service consisted solely of a gourd shell, in which some Pinole had been moistened, to make a sort of hasty pudding. There were no spoons, but they made use of their fingers, making alternate "grabs" at the moistened Pinole, and conveying it to their mouths. This was their whole meal, as it had been for several days, yet the heartiness with which we were asked to dismount and partake of the best they had, was most charming, and made an impression that many years has not removed. The experiment with Pinole can be easily tried. Corn should be slowly and carefully parched; it may then be ground in a clean coffee-mill, if no other mill is at hand. We do not know the proportion of sugar, but that may be easily learned by experiment, and the same may be said of the spices. Pinole has the advantage over oat-meal used in making a drink, in the fact that it is thoroughly cooked and the more readily digestible.

Preserving Ice.

We are frequently asked to give directions for constructing a refrigerator for family use. Several of the refrigerators offered for sale are constructed upon correct principles, and are very economical in the use of ice. A home-made ice-box will answer every purpose. In constructing an ice-box, the first point is to shut out heat from without. To do this the box must be double, and the space between the outer and the inner box filled with some non-conducting material; this may be sawdust, charcoal, dry tan-bark, or any similar substance, and this material must be kept dry. Here comes the chief difficulty in making a home-made refrigerator: the inner box must be water-tight, and consequently lined with metal; zinc is the best. The size of the inner box having been fixed upon, make an outer box about four inches larger each way. The inner box should be lined with sheet-zinc, and have in the bottom an opening an inch in diameter, to which should be soldered a tube of the same material, 6 inches long, to carry off the drip from the melted ice. Two pieces of scantling should be placed on the bottom of the outer box, to hold the weight of the inner one, and prevent it from pressing upon the sawdust or other filling. A piece of coarse sponge placed in the tube at the bottom of the inner box, will allow the water to pass out, and prevent the warm air from entering. There should, of course, be ledges soldered at convenient places to the zinc lining, to allow of light wooden racks to be placed here and there, to hold the food and other articles. The



A HOME-MADE REFRIGERATOR.

best refrigerators, arranged for the most economical use of ice, have a place for the ice at the top, but in a home-made affair, the ice may be placed in a large lump at the bottom. In using an ice-chest, care must be taken to introduce no articles that by their strong odor will injure butter, cream, or milk, if these are placed within it. Fish and meats will give an unpleasant flavor to butter. Where ice is plenty, a temporary refrigerator for such strong-smelling articles can be made by the use of a box or barrel, placing in it a lump of ice wrapped in a piece of carpet or a blanket, and putting in the articles by its side.

Canning Fruits and Vegetables.

American housekeepers are not aware of the great advantages they enjoy over their European cousins in the matter of canning. It is not many years since the representative of one of the leading London Journals, who was on a visit to this country, found this one of the most interesting things that he noticed on his trip. Wherever he went he found the ladies of the household engaged in canning fruit—a thing then unknown in England. At his request we wrote an account of the matter in detail, which was published in his journal. The American housekeeper accepts canning as a part of the regular household routine, and it in a great measure takes the place of the old "preserving" time. To successfully put up fruits and vegetables, the great essential is glass jars, or cans, that are readily made air-tight. These are now supplied by manufacturers, several patterns of them, in a form so complete that there is little practical difference among them. The jars of the leading makers of the present day are well nigh perfect, and we do not know of any choice between them.

Having the cans, or jars, the operation is simple. The fruit, whatever it may be, in a syrup just strong enough to properly sweeten it, is brought to the boiling point, and when the air has all been expelled from it, it is at once placed in the jars, previously warmed with hot water, and when these are well-filled, the cover is screwed down tight. Good jars, well filled with boiling fruit, and promptly covered by screwing down the caps, will insure success. Many years ago, when canning was not so general as it is now, we showed how any common wide-mouthed bottle could be used, but at present, jars made for the purpose are so cheap, that it is not necessary to resort to any make-shifts. Among the first things to be put up in this manner is Rhubarb. This, as shown in April last, p. 163, can be readily canned, and green Gooseberries may be treated in the same manner. Strawberries and Raspberries come next, and are better preserved in the same manner than by any other, but these, especially the Strawberry, while vastly better when preserved thus than in any other manner, come far short of retaining their original flavor. Peaches are easily preserved thus, and are nearly perfect, as are pears, especially the Bartlett, apples and quinces. One who has put up the quince in this manner, will never preserve it according to the old pound for pound method. All the highly flavored apples, preserved by canning, make a finer apple sauce than can be produced in any other manner. The usual process is, to cook the fruit, of whatever kind, in a syrup made with four ounces of sugar, to a pint of water. When the fruit is cooked tender, transfer it at once to the jar, and add the syrup to fill up every crevice, if there are bubbles of air, aid them to escape, by the use of a spoon; see that the jar is solid full of fruit and syrup, and up to the top, before the cap is screwed on. While fruits are easily preserved in the family, vegetables are more difficult. We have many inquiries about preserving green peas, green corn, and tomatoes. Those who make a business of canning, find green peas and green corn among the most difficult things to preserve. They can only be put up in tin cans by long boiling processes, not practicable in families. If any of our readers have found a method by which either corn or peas can be preserved by any process practicable in the family, we ask them to communicate it, for the benefit of others. Last autumn we made an experiment with tomatoes. Thoroughly ripe fruit was cooked as for the table, omitting butter and all other seasoning, and put up in ordinary fruit jars. About 3 out of 12 failed, but those which succeeded were vastly better than the tomatoes purchased in tin cans.

Sleeping Accommodations.

Cleanliness is the great essential. Our life is passive during the hours of sleep, but our breathing goes on constantly, and the demand for pure air in sleeping rooms is very important. There should always be communication with the outside air, and in warm weather, the doors and windows may all be wide open. If currents of air can sweep through the rooms in the day time (or in the night without endangering the sleepers), so much the better. The bad air that originates in sleeping rooms—the waste substance that escapes from human bodies, by the lungs and skin—settles and clings about the carpets, curtains, bedding and clothing, tainting them with decomposing, and it may be, poisonous matter, unless a constant cleansing process is carried on by plentiful airing, and the action of light, especially sunshine. The room should contain as little drapery as possible. Rugs are better than carpets, and no heavy curtains should he used. The hed should not be made up after using, until the bedding has heen well aired, and the more it can be exposed to bright sunshine, and out-door hreezes, the better. The room should be kept as free as possible from all odors. The night clothing should be well aired during the day, and all the day clothing be placed at night where it will get aired before it is again worn.

Sleeping rooms are often much erowded. It would be well, could each, when old enough, have a private room and a clean bed apiece. A great gain in health would result from this arrangement. In our present state of poverty, we can only insist that no more than two ought to occupy the same bed. It is an outrage on infancy to wedge a baby in between two grown-up people. Much injury is done to the health and to the morals of children, by the crowded sleeping arrangements in families. The practice is now becoming quite common among careful people, where there arc several young children, for the parents to divide the care of the little ones, the mother taking the youngest in her bed, and the father attending to the next to the youngest, and to others if there is need. It seems a pity that the man of the house should be broken of his rest, but it is quite as had a thing to have the children's mother made sick and nervous from laek of sleep, and excess of care. With attention to the laws of health, especially in regard to food and air, there need be little suffering from broken rest, as healthy children sleep soundly and quietly, and need little care.

A Neat and Handy Catch-All.

This little Catch-all is to be hung in a sitting-room or bed-room, to hold the little trimmings and scraps of waste paper, which make such an untidy

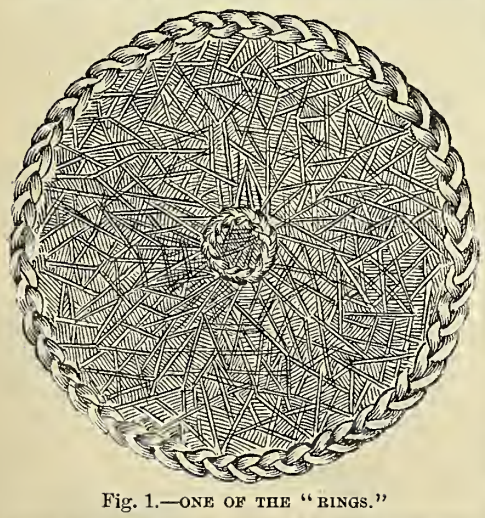


Fig. 1.—ONE OF THE "RINGS."

litter if left around loose. The rings are crocheted from wrapping cord, and the bag is made of hlue or red eashmere. For the rings, first make four chain stitches, join, and over these make fifteen stitehes in double erochet (see fig. 1); each ring is made separately, and when fifteen are finished, they are sewed together with strong thread, so that the stitches do not show on the right side, in the shape shown in figure 2. A similar half diamond is made for the other side. Cut of pasteboard two pieces, the size of the rings after being sewed together, and cover each on both sides with cashmere. To these pieces sew a puff

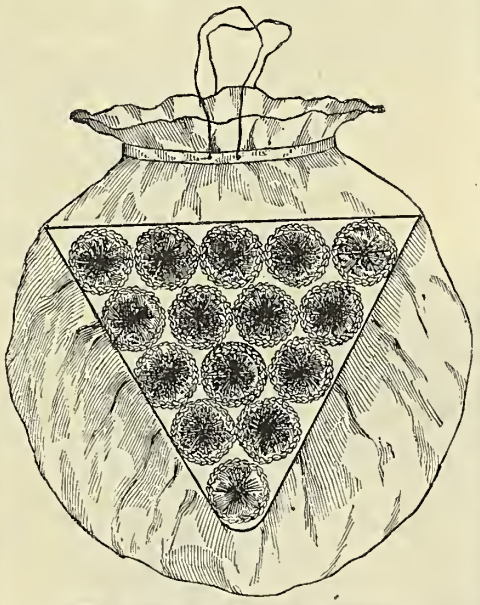


Fig. 2.—THE CATCH-ALL COMPLETE.

four inches wide, and long enough to allow for gathering. A piece of the cashmere, five inches wide, is sewed around the top. The upper edge is turned down to make a hem an inch deep. A secoud row of stitching is put an eighth of an inch above the first, to make a casing in which is run a colored cord for a draw string. The bag is hung up hy the cord which is knotted together, and the knot drawn into the casing. O. Y. Y.

Juvenile Love Affairs.

BY FAITH ROCHESTER.

Yesterday afternoon a young girl aged fifteen, eoming out from a public school near here, was confronted by her jealous lover aged sixteen, who attempted to shoot her, because he thought she liked some other boy better than himself. Failing in this attempt, he blew out his own brains. In this morning's paper, I find a similar story told of an equally youthful couple in some southern city. It strikes me that "Juvenile Love Affairs" is a very practieal subject for parents to eonsider. There is some great lack in early home training, hack of follies and crimes like these. Foolish reading has mueh to do with these failures, and for that, parents and teachers are responsihle. They should cultivate in children a taste for good reading, and then carefully supply the demand.

Those who leave this important part of education to ehance, can have no reasonable hope that their children will escape serious harm and disgrace. Children whose minds are fed habitually upon stories, get a weak mental digestion, and have no inclination for instructive books. From childish stories of a sensational kind, they go naturally to novels, and poor novels are very much more ahundant than good ones. It seems to me really best that no novels at all should be read by boys and girls under sixteen. Webster defines the word nov el, as I use it here: "A fictitious tale or narrative, intended to exhihit the operation of the passions, and particularly of love." There are fictitious stories of considerable length, that ean not properly he called novels. Who would apply that name to the "Rolla" books, the "Prudy" series, or to Miss. Edgeworth's and Miss. Olcott's Juvenile books? "Love stories ahout murder," defines popularly the elass objeeted to.

A parent who has to *forbid* novels to his or her children has reason to feel ashamed, for it implies a previous failure of duty. The first duty is to see that a taste for wholesome reading is developed in the child. Read to it when very young, interesting faets of natural science or history. A very little at a time, made very simple and plain, and given if possible when the mind craves food—when the child asks "Why?" or "How?" I often wonder whether the readers of the *American Agriculturist* appreciate the value of the "Doctor's Talks." It is hardly possible to say too much in their praise. Most writers for children go on the supposition that all facts must be rolled in a sugar coating of fancy (or fairy stuff), to be acceptable to the young, but my owu experience leads to a different belief.

But *good* stories have their use, and I have often searched for them, feeling serious need of their help in training my children. This is the help I wish them to render; to aid in developing moral character, in raising one's standard of manners, serving as a sort of antidote for the effects of unavoidahle association with persons of poor breeding, or low moral tone. Good biography is still hetter. If good juvenile stories lead on naturally to a moderate use of the best class of fiction, there is no necessity for prohibition. Novel-reading usually has a weakening rather than an elevating effect upon character, and love stories stimulate an unhealthy sensationalism.

Are children to be kept in ignorance concerning the "grand passion?" I hope not. I hope they will learn something of it in the most natural and wholesome way—as exemplified in the life of their parents; not in any silly ostentatious manner, but in the genuine regard shown hy each for the other's happiness. Children should never hear love spoken of as a light matter, but they should grow up with a realization that the proper choice of a husband or wife, is something that demands the full exercise of the reason and practical judgment, as well as the warm sauction of the heart. They should be taught, by the hahitual judgment of their parents and friends, when such matters are talked about, that a choice "for better or for worse," of a life companion, demands the exercise of mature powers, and can not properly be made in school days.

"In school days!" That brings to mind the sweet story told by our bachelor poet, Whittier. Indeed I was just going to mention this genuine little love affair, or warm friendship of children. Hardly any warm-hearted hoy or girl escapes some experience (usually hrief), of the kind, but the less said about it the better. If silly people do not meddle, and if the boy or girl makes mamma a judicious confidant, no harm is done. Often the dream is unduly broken, sometimes the fascination developes iuto a pleasant lasting friendship, and occasionally it grows gradually into the happy love of a life-time. I have had sweet artless confessions made to me by very young children. Sympathy should not be withheld on occasion of any frank confidences, but a mutual liking of a little boy and girl, should neither be jokcd about, nor treated too seriously. Sentimentalism is always unhealthy, and its best antidote, is activity in practical matters. I never like the pairing off of little boys and girls. Let them study and play and work together, and be good faithful friends, if mutually attraeted on any reasonable basis of friendship, but heaux and lovers do not helong naturally to childhood and early youth. Children's parties usually do mueh more harm than good. The whole Valentine business seems to me decidedly unwholesome, and I am amazed to learn that Valentine boxes have lately heen introdueed into some of our public schools, on the 14th of February, for the convenience and eneouragement of youthful pairs, who wish to exehange those silly (however pretty), tokens of insincere love. I do not believe that sincere and sensible lovers resort to such expressions now-a-days. Another more common custom in our schools has a tendency in the same wrong direction—the choosing hy ballot of the handsomest girl for the May Queen. Great growths of vanity and of envy are sometimes the results of this unnecessary performance. As parents and teachers and friends of the eoming men and women, let us eucourage only those things that tend to promote the various virtues, and to increase true happiness.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

Throughout the summer, and over a large part of the country, there may be found in meadows and pastures, and along the road-sides, a plant of which a portion is shown in fig. 1. The plant is about a foot bigh, and bears at the top a broad cluster of bright yellow flowers.

Fig. 1.—A FLOWER CLUSTER OF ST. JOHN'S WORT.

If you ask the farmer about the plant, he will no douht tell you that it is "St John's Wort," or if he does not happen to know it by name, he will tell you tbat it is a plant that he would like to get rid of, as it is a weed. It came from Europe, and is now widely scattered, not only in this country, but in Canada. It was given its name in the times when people believed in witcbes, and this plant was hung at the doors of bouses on the eve of St. John's Day (June 24th), to keep away evil spirits. You will recollect that, in May, we started our talks about plants

With the Buttercup.

You can find plenty of Buttercups now, and I wish you to compare that flower with this of the St. John's Wort.

Fig. 2.—PARTS OF A ST. JOHN'S WORT FLOWER.

If the Buttercup itself is not at hand, you can turn to fig. 1, in May, but it is always better to have the real thing, to examine with your own eyes. A drawing, no matter how truthful, shows the flower as it was seen by another person's eyes. Recollect that the Buttercup was shown to have a green, leafy *calyx*, a bright yellow *corolla*, and within these, the most important parts of the flower, are those concerned in producing the seeds, *stamens* and *pistils*.

The Flower of the Pea

was taken to show how the parts of the flower could differ in shape, and while of the same number as in the Buttercup, the flower had a very different appearance. In June, otber differences in the flower were shown, and now, in this St. John's Wort, I wish you to notice still others. You find that the flower of this has, like that of tbe Buttercup, a calyx of 5 sepals, and a corolla of 5 petals, somewhat differently shaped. When you come to the stamens, you find a great difference; while there are many in the Buttercup, and all are separate from one another, the stamens in St. John's Wort are in clusters, stuck together as it were at their lower parts (*filaments*), to form three (rarely five) little bunches. You can see these clusters more distinctly in the flower than in the engraving. Still another difference is to be seen in the center of the flower. The Buttercup has a great many pistils, all separate; in St. John's Wort, tbere is

But a Single Pistil,

witb three spreading styles. If you cut this pistil open, you will find its lower part, or ovary, has three parts, as if it were made by the growing together of three pistils. In figure 2 the parts of the flowers are shown much enlarged; *a* gives the shape of one of the petals; *b* is a flower cut through lengthwise, and shows the interior of tbe pistil; *c* is a separate cluster of stamens, while *d* is a cross-section of a bud, showing its different parts. We have already made use of the pea, to show the shape of its petals, and I now wish you to look at its stamens. Pull off the petals onc by one, carefully, and you will find 10 stamens, with their stalks, filamcnts, for more than half-way from their lower ends, united to form a sort of sheath or tube, while at their upper ends they are all separate. If you look sharply, you will see that this statement is not quite correct, for *one* stamen is not joined with the rest, and while 9 stamens are joined, one remains separate, as in fig. 3. In other flowers you may find all the stamens joined in various ways. I speak of the different parts of the flower as united or growing together. Tbis does not mean that the stamens were once separate and afterwards grown together, but that parts, in their uses the same, are in some plants separate, and in others united. Tbese differences are no doubt of use to the plant, though we can not always see how. The great charm in studying plants, and animals also, is not merely to find out their names, but to see the same general plan running through a vast number of forms, and to trace out this plan in the most unlike objects. We have heretofore looked especially at the flower; but, while we have St. John's Wort in hand, we will notice something about the leaves. You will observe that in this plant the leaves are in pairs, and *opposite* one another upon the stem, while the leaves upon the stem of the Buttercup are not so placed, but each leaf is by itself, and the next one is higher up, and on the opposite side of tbe stem, or alternating with one another. The leaves of the Buttercup are (mostly) much *divided* and cut, while those in the St. John's Wort are *entire*, the edges being without any division. If you hold a leaf of the St. John's Wort up to the light, it will appear as if it were pricked with a great many minute holes, as seen in a leaf of the real size at the right of figure 1; these apparent holes are little places containing a minute quantity of an oil, and similar dots are found in many other leaves....I have taken the Buttercup as a

Pattern-flower, or Starting Point

from which you could learn about other flowers. There are some flowers so very unlike the Buttercup that it is at first sight difficult to trace any resemblance—the flowers of the grasses for example. I have met with intelligent persons who, never having thought of the matter, were surprised at being told that grasses had flowers. Tbe grasses (which means all the grains, including Indian Corn, Sorghum and Broom Corn) are certainly those the flowers of which

Every Farmer's Boy and Girl

should wish to know about, for these flowers are the very beginning of their father's prosperity—indeed the source of the wealth of the nation—for are not the grasses and the grains the very foundation of our national success? Let us then try to learn something about these important plants. It may seem difficult at first sight, but as you come nearer to them the difficulties will disappear—at least I will try to make the matter plain. What I said last month about the flowers of the Willow, will help you to understand the flowers of the grasses. If you will look back to last month and review that Talk, you will see that we may part with the corolla of our Buttercup, and still have a good flower; that the calyx may also go, but as long as stamens and pistils were left, the flower would produce seeds; and after all, that, as in the Willow, the stamens and pistils might be reduced in number to one or two, and these even placed in separate flowers. You will recollect that the Willow flowers consist of either two stamens (fig. 2, June) placed in a leafy scale, or a single pistil (fig. 3, June) in a similar scale. The Willow helps you to understand grass flowers, as it shows that the calyx and corolla, the showy parts of the flower, may be absent, small leafy scales serving in their place. To apply this knowledge to grasses let us take one of the most common, as well as one of the most useful of grasses,

3.—STAMENS OF THE PEA.

A head of Timothy.

This at first sight appears to be only a lot of green chaff crowded upon a stem. Now if you gently break off some of this chaff, or carefully take it off with a knife, you will find the separate green bits to be like fig. 4, which is somewhat enlarged. If you have a hand magnifier, or one of the small *American Agriculturist* Microscopes, you can with a little pains separate this and see that it consists of two pieces of chaff, *a*, *b*, and you will find within two much smaller and very delicate parts, *c*, *d*, fig. 5. Within these inner parts, if you take the grass at the right time, will be found three stamens, *e*, and a pistil, the two hairy styles of which are shown coming out of *c*, *d*. This is a very simple grass-flower, but all of those which seem more complicated are but repetitions of these. It is convenient to have names for these parts; the outer pair, *a*, *b*, are called *glumes*, and the inner pair, *c*, *d*, are *palets*. The stamens and pistils you learned something about in the Buttercup. In grasses, the stamens are generally three, with large anthers, which are hung by the middle to very long slender *filaments*. There is one pistil with (usually) two long slender, hairy styles. The glumes you will notice lap over one another a little; one is outside of the other, and is known as the *lower*, and the other as the *upper glume*, and the two palets are also lower and upper.

4. PART OF THE GRASS FLOWER.

About Botanical Names.

Some people thoughtlessly ridicule these, and others think them very hard to remember, although they use them daily. Now Botanists give two names to a plant; one shows the kind, or *genus*, to which it belongs, the other the *species*. A genus is a collection of plants that agree in certain points. The Oak genus has many species, but they all agree in certain points, especially in bearing acorns. The species, such as black, white, live, and other oaks, differ in the size and shape of the acorns, of the leaves, and in other matters. In naming the plants, names are used that are recognized all over the civilized world. Thus, *Quercus* is the ancient name for Oak, while the species is indicated by another name following it; the *Quercus alba*, is White-oak, *Quercus virens*, the Live-oak, *alba* and *virens* being Latin names for "white" and "live," or "living." It is very important to have such names, as common names are very uncertain and vary greatly. We use *Geranium*, *Magnolia*, and a host of other botanical names without finding them difficult, because we have no other terms for these plants. Now our St. John's Wort (see Doctor's Talks) is *Hypericum*. The name of the genus, or generic name, is a very old one, used by the ancient Greeks for the plant, and its meaning is not known. But there are many Hypericums, and the one we have been talking about is called *Hypericum perforatum*, because the dots in the leaves make them appear as if they were perforated—or full of little holes. When the meaning of the names is understood, much of the difficulty ceases.

Fig. 5.—FLOWERS OF A GRASS.

Our Puzzle Box.

LETTER ENIGMA.

I'm in the earth but not the sand,
In the water, not the land,
I'm in the men but not the boys,
In the trinkets, not the toys,
I'm in the ocean but not the ship,
In the passage, not the trip,
I'm in the house but not the lot,
In the dinner, not the pot,
I'm in the ore, but not the mint,
In the picture, not the tint,
I'm in the gate but not the latch,
In the garden, not the patch,
I'm in the face but not the hand,
In the table, not the stand,
I'm in the head but not the hair,
In the pretty, not the fair,
I'm in verse but not the song,
In the meeting, not the throng.

MRS. MAYO.

MYTHOLOGICAL ENIGMA.

A nymph of Crete,
An Athenian princess,
One of the nine Muses,
A celebrated god of antiquity,
A deity of the Egyptians,
Certain inferior deities,
One of the Argonauts,
A king of Thrace,
A sign of the zodiac,
A divinity of the Romans,
A queen of Lydia,
A goddess of woods and groves
A famous archer,
The first king of Arcadia,
One of the Oceanides,
A son of Somnus,
One of the Pleaides,
One of the most ancient gods,
A son of Jupiter and Europa,
The goddess of sensual pleasures,
A king of Argos,
A votary of the Muses,
The initials give a line of Cowper.

MRS. MAYO.

ENIGMA.

I am composed of 28 letters:—
My 12, 24, 16, 8, is often seen in a parlor.
My 21, 2, 25, 19, 27, is a residence.
My 1, 11, 26, 13, is the produce of a foreign tree.
My 15, 18, 14, 9, 23, is seen in winter but not in summer.
My 23, 7, 4, 22, 6, 10, 13, is pretty to look at, but painful to handle.
My 5, 17, 3, was the ruin of man.
My 20, 28, is a pronoun.
My whole is an adage suiting the present times.

Answers to Puzzles in the May Number.

PATCHWORK.—1. Mash. 2. Maroon. 3. List. 4. Lie. 5. Lea. 6. Layman.

DISLOCATION.—Where there's a will there's a way.

ALPHABETICAL ARITHMETIC.—204)9,736,154(47,726. *Key*, GREY CLOAKS.

PUZZLE.—LOVE.

NUMERICAL ENIGMAS.—1. Contentment. 2. Patience and Perseverance.

CONCEALED SQUARE WORD.—
T H E M
H O M E
E M M A
M E A N

RHYMING PUZZLE.—
Little Johnny the dancing bears wanted to see,
But said it would cost him a d—i—m—e.

CROSS WORD.—Gingham.

METAGRAM.—Caper, in which may be found: 1. Ape. 2. Carp. 3. Pea. 4. Pear. 5. Rape. 6. Acre. 7, 8. Cap, Cape. 9. Crape. 10. Ear. 11, 12. Pace, Race. 13, 14, 15, 16, 17. Rap, Reap, Pare, Care, Are.

HIDDEN ANIMALS.—1. Tiger. 2. Shrew. 3. Leopard. 4. Mole. 5. Mastiff. 6. Ape. 7. Tapir. 8. Beaver.

TRANSITIONS.—Bare, bate, bite. 2. Sour, pour, poor, poop, prop, drop. 3. Park, part, pert, peat, peal, veal. 4. Curd, cure, core, corn, coin, chin, thin, then, when, whey. 5. Leaf, deaf, delf, dell, well, will, wile, wine, viue. 6. Rail, roil, toil, toll, told, toad, road.

HALF SQUARE.—
F U L T O N
U N I O N
L I E N
T O N
O N
N

ADDITIONS AND TRANSPOSITIONS. 1. Chips — Physic. 2. Lap—Opal. 3. Noon—Onion. 4. Bear—Sabre.

ILLUSTRATED REBUS, No. 490. — Little minds are caught with trifles.

Illustrated Rebus 491.—Hidden words for all to study out and reflect upon.

The Owl Family at Home.

"Birds of a feather flock together," but young birds that are not old enough to have feathers are often inclined to get away from each other. The artist has given us here an inside view of the interior life of a family of pretty brown owls. The father and mother owl have, with great care, brought the family of little owls to that time in life when the temptation is strong to leave the home nest, and seek their fortunes in the outer world.

THE BIG OWLS AND LITTLE OWLS AT HOME.

They see the old parent birds fly away with so much grace, that it seems to them an easy matter to lift their wings and glide away. Just what has been the day's disaster, we do not know, but it is evident that something unusual has occurred, and the parent owls are giving the little ones some looks, if not words of reproof. It may be that the boldest of them has scrambled over the edge of the rough nest, and trying to fly, has fallen headlong to the ground below. Perhaps this rapid descent has diminished the number, and there is, so-to-speak, a vacant chair in the owl-home to-night. Whatever may have been the trouble, it is quite certain that the father owl is laying down some parental law, which, if heeded, will make the life of the little ones more secure and happy. The mother, whose feathered breast may be heavy with a deep sorrow, is not silent—and all together, it is an eventful evening at the home of the brown owls in the deep dark woods.

The Fourth of July.

My young friend "H. B. D.," asks me to say something about the Fourth of July. His letter may be taken to ask: shall we celebrate the 4th?—and how? The first part of his question, I can answer by saying—yes, by all means; the other, the "how," is more difficult. Every boy feels that on the Fourth day of July, he must "do something," that somehow this day must be different from any other day, and many a boy thinks that on this day, of all others, he must make a noise. Many begin early in the year to lay by their money to be expended in fire-crackers, and other things that will make a noise on the 4th. I well recollect how on the night before the 4th we used to collect all our noise-making affairs; crackers, small cannon, and even the blacksmith's anvils, the holes in which could be used to fire off gun-powder, and make a noise. I also remember that, when after a noisy night on the 3rd of July, we were very tired on the 4th of the same month. Now, in full sympathy with every boy who wishes to "celebrate," and with a full recollection of some very tiresome celebrations, I would say a word to my young friends, and that is: whatever else you may do, *take it easy*. Celebrate by all means. Make a noise, the biggest noise of the whole year, if you can do no better—but can't you do better? Let us look at this 4th of July matter, and ask:

Why do We Celebrate the 4th of July

any more than any other day? I wonder how many of those boys who have been for nearly a year, saving up their money for the purpose of buying things that will bang and fizz on the 4th, ever thought of the "why and wherefore" of the matter. If they are told that making a noise is not the best way, they will ask, and they have a right to ask:

How Shall We Celebrate?

Now I wish to say that I believe in the 4th of July, and I would have every boy regard it as the day of days (save Christmas) in all the year, and I would have bang and fizz from end to end of this broad country, if we can do nothing better to mark the day, and when I say that I should not feel quite right if I had not made some kind of a "bang" on the 4th, I know that you will understand that I have not forgotten that I was once a boy. I only wish for not less of a celebration, but for a more marked and general one. I wonder how many of those boys who have been looking forward to the coming 4th, and have been saving up their money for things that make a noise, have ever considered the question propounded above, "Why do we celebrate?" Now would it not be the very best thing for sensible youngsters, as we take all ours to be, to devote the coming holiday to this question. Some of you may know that it is the anniversary of

"The Declaration of Independence,"

but what does that mean? Now I would suggest that on the coming 4th, make as much noise as you please, but give a part of the day to the important question—Why do we celebrate?

How Shall We Do This?

A good way will be to have a picnic, that will bring together all the youngsters in the neighborhood, in

A FOURTH OF JULY SCENE IN A LARGE CITY.—*Engraved for the American Agriculturist.*

some pleasant spot, and then let one boy read the "Declaration of Independence," that document which was the cause of all the celebrations. Make sure that whatever else you do, this "Declaration" is read and listened to; then sing the "Star Spangled Banner," "Red White and Blue," and other patriotic songs. This done, make as much noise, and be as lively as you please, but always, every year, on the 4th of July, so long as you live, read or hear read, that grand old document, the "Declaration of Independence." Now for the evening; many spend a sum for Roman Candles, Rockets, and other fireworks. I would suggest as

Better than Fireworks,

the paper Chinese lanterns. These, with the candles, cost but little, as compared with fireworks, and when hung on the piazza at night, and in the trees about the house, make a most pleasing illumination, which is enjoyable for hours, while fireworks make a fizz and a noise, and are over at once. Boys often make a great mistake in beginning their celebration too early—often at midnight on the 3rd, and when night comes on the 4th, they are quite too tired to enjoy anything. This more frequently happens in towns and cities, than in the country. The boys in a large city are to be pitied on the 4th of July, those at least who have but very little money, and are unable to go off on some of the many excursions provided on that day. There are in every city, large numbers of boys who do not seem to belong any where in particular, who black shoes, sell papers, carry parcels, and work at all sorts of odd jobs. These boys have the same idea of the 4th of July that other boys have, that is that they must "celebrate" it, and that means in doing something that they can not do on other days; they usually manage to save a few coppers in advance to be expended on that day. Now that the police are strict in preventing the firing of crackers, pistols, etc., on the streets, these youngsters are deprived of a large share of their fun. What is the 4th of July without fire-crackers, or something that will make a noise? They learn somehow, and very early, that the 4th of July must be celebrated, and that in their minds means to shoot off something. If they cannot shoot with a "bang," they do the next best thing, and shoot without the "bang," and it is a great harvest day for the big lazy fellows who keep the street target galleries. These chaps find some place in a side street, or one where a new building is going up, and put up their targets; at these the boys can shoot with spring guns, which throw a sort of dart with a steel point. The crowds that sometimes gather around these targets are not always of boys, for many others watch these rifle matches, as the engraving of such a street scene shows. The boy and girl at the left-hand interest us more than do any others in the picture. The little girl is evidently trying to persuade her brother not to spend his money so foolishly. She does not appear to have much success, as the boy looks like one who, on this day at least, is bound to declare his "Independence." Hot pavements, crowded streets, shooting a mock gun at a target. It is the best the little fellows can do—but they are in their way celebrating this memorable day. You who can show your patriotism in the open country, and in pleasanter methods, should not look unkindly on these little fellows, but be glad that among boys every where, this day is remembered; let us hope that they may learn why it is remembered. It will be a bad day for this country when its boys do not look forward with pleasure to the coming of the 4th of July. THE DOCTOR.

To Parents.—We cannot say more to parents than this—That if they will buy for their children shoes with the A.S.T.Co black tip on them they will reduce their shoe bills one-half, while at the same time they add to the beauty of the shoe, even the finest.

DON'T BUY ensilage or feed cutters till you see The New York Plow Co.'s "Cycle" Cutter, 55 Beekman St. Proceedings of Ensilage Congress, 30 cts. Far-South Seed Corn, $2 bu.

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6 Shirts for $6.

I have extraordinary facilities for making Fine Shirts at a remarkably low figure, which will prove perfect in fit, and wear as well, if not better, than many for which higher prices are paid. The bodies are made of **Wamsutta Muslin**, and with **reinforced fronts**. The bosoms are made of fine Irish linen, three-ply, and shield-shaped. The trimmings are all fine linen. The yokes and sleeves are double-stitched. Sleeves and backs have facings. **All seams** are **double-stitched** or felled.

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A sample Shirt will be sent by mail on receipt of One Dollar and 15 cents to pay postage. State size of collar worn.

Samples of material and rules for self-measurement will be sent free. Address,

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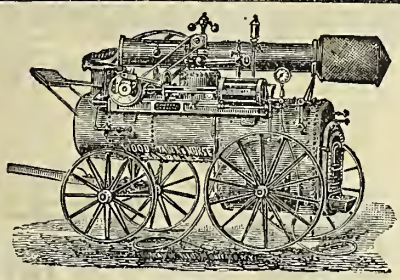

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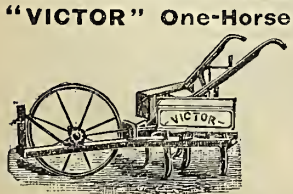

(3 and 5-Hoed), for sowing *Wheat* between *Standing Corn*, or *Wheat, Rye, Barley, Oats, Rice*, etc., in fallow ground. Can be adjusted also to drill *Corn* for *ensilage* purposes. (Send for circulars).

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We also manufacture in seven colors

Roof, Railroad and Sea-side Paints,

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We have already given a favorable report upon these paints, and a year's additional wear confirms the opinion formerly expressed. To meet the demand caused by new styles in decoration, the H. W. Johns Co. have brought ont a variety of "fashionable" shades which will allow every style of outside and inside decoration to be done with these, that is possible with common paints.—*American Agriculturist*, April, 1881.

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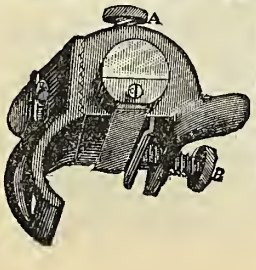

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It does not impair the taste or flavor, is thoroughly reliable and *absolutely harmless to the human system.*

SEND 35 cts. for a sample, forwarded free; sufficient for 40 gallons. One pound, sufficient for 8 Bbls., $1.50, receiver to pay charges, or $1.80 by mail, prepaid. Price lower in larger quantities.

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☞But by patient and scientific chemical research we have improved in several points, and now offer this new color as *the best in the world.*

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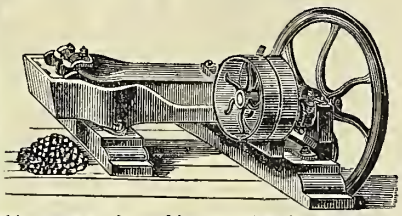

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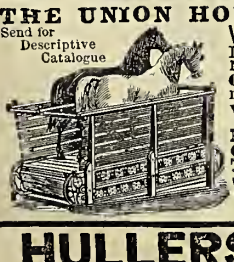

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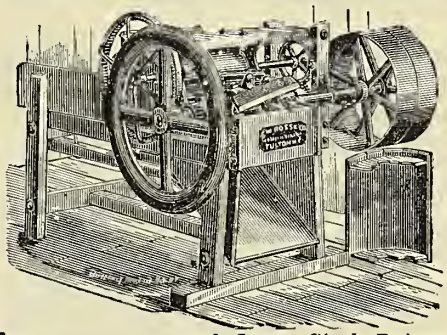

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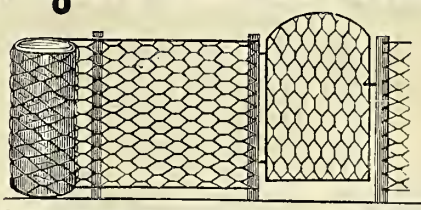

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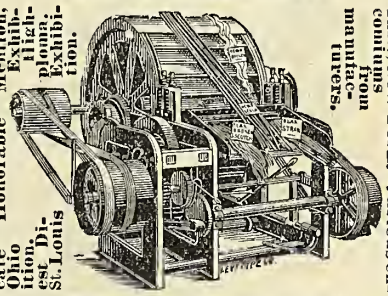

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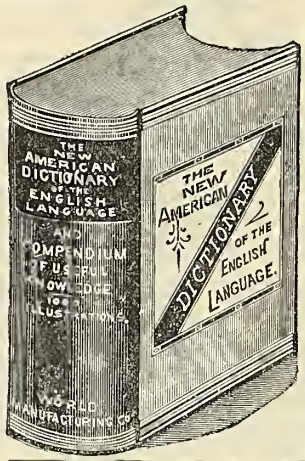

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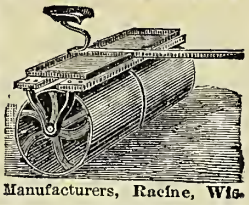

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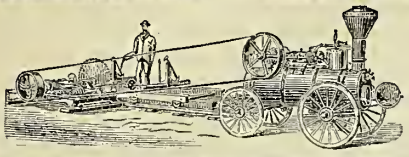

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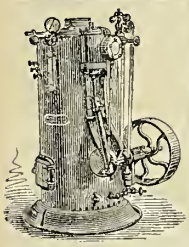

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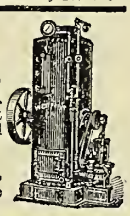

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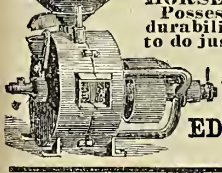

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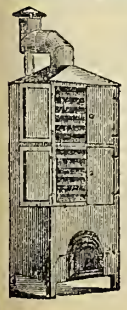

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It is well to always run one's eye over the advertising pages of this Journal, and see what is offered, by whom, etc., as a source of information. There are usually *new* and valuable implements, and other things worthy of attention, while no vile or quack medical nostrums are present to disgust the old, or deceive or allure the young. No man is admitted if there is not good reason for believing that he has both the *ability* and *intention* to do what his advertisement promises. The Editors have full veto power over every advertisement offered, and they exclude the advertisements of every party whom they would not themselves patronize, if wanting the articles offered. ☞When corresponding with any of these advertisers, sending for their circulars, catalogues, etc., it is well to inform them that you are a reader of this Journal. They will know what *you* expect (and what *we* expect) of them in the way of prompt and fair treatment.

Lime with Muck.—Newly-slaked lime is an excellent thing for composting with muck. The vegetable matter of the muck is decomposed by the caustic action of the lime, and made soluble, and thereby available as plant-food. There has been a good deal said of late in favor of ground limestone as a fertilizer. On most soils it is of very little use, and in its good effects in the compost heap is not to be compared with the fresh-burned lime. It may be said here that it is a good time to get out a supply of muck during the summer months, when the beds are dry.

Pond Water.—Every farm animal should be provided with an abundance of pure water. Small ponds, sloughs and spring holes are not fit to furnish water to any kind of domestic animal. If a slough must exist in a pasture, it should be fenced in, and thus remove the temptation for swine and cattle to drink from it. More animals die from diseases induced by filthy water than is generally supposed. A running spring, with clean surroundings, is a most valuable feature upon a farm. Other sources of water are a never-failing well, then come the well-kept cistern, the running brook, the lake, and the large pond.

Camellia Cuttings in Water.—Placing the cuttings in bottles of water has long been the popular method of propagating the Oleander. This method answers well for some other hard-wooded plants. A writer in a recent number of the "Revue Horticole" gives an account of his success with the Camellia, treated in the same manner. He takes cuttings of the growth of the previous season with three or four buds, places them in bottles of rain-water on a tan-bed, and covers with a hand-glass.

Artichokes.—"R. C. T."—We do not as a rule answer those who do not care to give their names—you give neither name nor State—But we vary from our rule, as others will be interested when we say that we suppose that the Artichoke about which you inquire, is a variety of the Jerusalem Artichoke (*Helianthus tuberosus.*) Several varieties are in cultivation, and that called the "Brazilian," is short and round, and much to be preferred to the old kind, with long and slender tubers. There is no danger that "the plant may become a pest," so long as you have any pigs. As to where they can be had—it belongs to those who have them for sale to say.

Portulaca—Purslane—Pussley.

A correspondent asks us to say something about "Pussley," but as he does not indicate what he would have us say about it, we suppose he has reference to it as a weed. The plant is known over a large portion of the country as "Pussley," which is evidently an abbreviation or corruption of the English name, "Purslane." The plant is known in Europe in cultivation and not as with us, as a weed. The derivation of the English name is by no means clear, some regarding the origin to be from *porcellana*, a sea-shell, the same from which the fine earthen ware gets its name; while others think the name derived from *porcella*, a diminutive of *porcus*, a pig, probably in allusion to its greediness in feeding. The botanical name *Portulaca* is ancient and its derivation is unknown. Our common Purslane (*P. oleracea*) is probably a native of the warmer parts of both hemispheres. Over a large part of this country it has become thoroughly established as a weed, and we have seen it growing on the far western plains as if it were a native. It makes but little show early in the season, but in the hot days of July and August it grows with astonishing rapidity. An inconspicuous seedling will, if left undisturbed, in a few days form a spreading mat a foot or more across. It is a gross feeder and of course a weed to be exterminated. It is very tenacious of life, and if the root is merely cut off, the plants will make new ones; hence in hoeing in the garden or the corn-field, the plants should be always turned over. While its presence shows slovenly culture it is not a very obstinate weed. When it is cut up by the hoe, only a part of the work is done; it should be raked up and fed to the pigs, who are very fond of it, else the plant, apparently dead, will have sufficient vitality to enable it to ripen its seeds. The plant has given rise to two proverbial sayings: "As mean as Pussley," and, as applied to a slovenly gardener: "He lets the Pussley get ahead of him." While the plant in this country is only regarded as a weed, in Europe it has a place among garden vegetables, the seeds being offered in the catalogues in several varieties, differing in the color of the stems, and the works on gardening give directions as to its culture. We do not need to cultivate it in this country, but in neglecting it altogether we let a very excellent pot-herb go to waste. The succulent and tender stems if cooked and dressed in the same manner as spinach, form a most excellent substitute for that vegetable, and one that is always to be had in the hottest weather. Those who are fond of greens should try "Pussley."

The Turnip Crop.

No crop makes better returns for labor bestowed than turnips. The seed may be sowed any time from the first of June throughout August, in many localities below the isothermal of say the north line of Connecticut. It may be sowed broadcast, in drills or rows, or as a "cattle crop," among corn; or turnips may be used to seed to grass with, sowing both the turnip and grass seed about August 1st. For turnips alone the preparation of the ground is simple. It needs good plowing and harrowing if in fair heart; but a dressing of 400 lbs. of bone dust or 250 lbs. superphosphate to the acre will almost insure a good crop. We rarely have such dry weather that turnips will not start in July, and soon as they make leaf heavy dews seem to be enough to keep them growing, but last year was an exception in this part of the country. In many fields turnip seed on dry ground did not germinate, or at least did not make any show above ground.

In sowing turnips broadcast the greatest care must be taken to have them thin enough. A pound of seed to the acre is all that should be sowed, and this should be divided, the whole piece being sowed twice at right angles. In Europe the seedsmen use old seed baked, or baked rape seed, to mix with turnip seed as an adulteration. If we could buy here such old baked seed so as to mix it ourselves—say five pounds of baked with one of live seed, and thus be able to make a fair cast, instead of throwing little pinches of seed as we now do, it would save a good deal of trouble. Sowed in drills, turnips must be thinned. Much rank manure gives a strong bad flavor. Turnips ought never to have the first chance at a dressing of yard or stable manure, but to come in as a second crop. As to varieties, there are two widely different classes, and intermediate varieties without number which it is hard to classify. Swedish or Russian turnips, generally known as "Ruta-bagas" or "Swedes," are a very distinct, hard-fleshed, glossy-leaved kind, occurring in many varieties, that need better soil, earlier sowing and better culture than the soft-fleshed or English turnip, which is rough-leaved, grows most rapidly, is a voracious feeder, doing well and making a bulky watery crop where Swedes would do very little, and yet it is question whether the small crop of Swedes would not contain nearly as much nutriment as the soft turnips. Between these two extremes of hard-fleshed and soft-fleshed kinds are many varieties partaking in a measure of the hard-fleshed character of the Swedes, but generally regarded and treated as belonging to the common or English species. Such are the "Yellow-globe," "Yellow-stone," "Dutch," etc. As a rule it is best to sow Swedes as early as the first of July, the "Globe" and "Stone" turnips as early as the 25th, and the soft turnips, "Strap-leafed flat," "Cow-horn," etc., by the 10th of August. The last named is the best to seed down to grass with, and on good soil not clayey, turnips and clover seed may be mixed together, using about 15 pounds of clover seed because some will winter-kill.

About Buying Milk.

It is delightful to have milk from your own cow, that you know is pure and good, that raises cream and has a fine flavor! If denied this privilege, the next best thing is to get milk from some well-known honest neighbor. If good and carefully handled, it should remain sweet all day in summer, if kept in a cool place, and longer in winter, or in cool weather. But the utensils in which the milk is received and stands in must be scrupulously clean, not neglecting the seams in the tin ware, in the pail cover, and the joinings of the handle, so that not one particle of milk is left to dry and become sour. After washing pail and cover thoroughly, scald them with boiling water, and wipe with a clean cloth. Then set them in bright sunshine or invert over the stove where they will heat without injury. Sometimes, when it is not convenient to use scalding water at every washing, I have used borax quite freely, or some strong alkali, rinsing very thoroughly, and drying them, after wiping, by sunshine and fire. Then if purchased milk sours, I know whose fault it is. The pail, however clean, should not be set away empty with the cover put on tight. If the milk is kept in the pail (not a good practice) it should not be shut closely. Leave it partly open until the milk has cooled, and never leave it standing in the midst of bad odors. If in spite of your care, the milk sours too soon, those who supply it must be in fault. The milk-pail or strainer may be unclean, or turnips or ruta-bagas may have been fed injudiciously. If the milk does not sour suspiciously soon, you may decide that the flavor is from turnips or wild garlic, or other plants in the grass or hay. It is not difficult to know if new milk is adulterated with skimmed milk by a little experimenting. It is not of the least use to expostulate with a person who sells you skimmed milk. If guilty she will be sure to be angry, and if dishonest enough to take your cream off, do you suppose she will be honest enough to confess it? All you can do is to change your source of supply. The milk peddler who comes to your door with his large cans of milk, is much more likely to adulterate his milk with water than with skimmed milk. His long jaunt in the sunshine, and shaking cans by the jar of the wagon tends to sour milk very soon. If milk does not keep sweet from one supply to the next, scald a part of it, not actually boiling it, and the scalded milk will do for most purposes.

Flies and Mosquitoes.

Much may be done to avoid the annoyance caused by these insect pests, by a little care in keeping them out of the house. In localities where they are especially abundant, it will pay to fit the windows and outside doors with a screen of wire cloth. Where this screen can not be afforded, there mosquito net may be substituted, but the wire screens, if properly cared for will last for years. Cheap frames, of the size to fit in the place of the upper or lower sash, can be readily made and covered with mosquito net, and should be provided for all the windows, at least for those of the rooms in general use. The doors, especially the kitchen door, should have a similar screen, and should be furnished with a spring, to make sure of prompt closing. If the sleeping rooms are aired and put in order very early in the morning, and then closed while the air is still cool, and not opened until the "cool of the evening," but few insects will find an entrance. In spite of all precautions, a few flies may find their way into the living rooms. These may be killed by the use of a folded newspaper, or all the windows but one being darkened, they will go towards the light. and may be easily driven out. Whatever the annoyance of flies in the house, *do not use fly-poison.* This is sold under the deceptive name of "Cobalt," to be mixed with sweetened water, and set about the rooms to attract the flies. It kills the flies—but it kills children also. We have known of two distressing deaths from this cause, and it should be generally known, that the powder sold under that name is not Cobalt at all, but is really *Metallic Arsenic*, and a most deadly poison. There should be a severe penalty for selling this most destructive agent under the false name of "Cobalt." *Do not use it*, either as "Cobalt," or in the shape of "Fly Paper." A dark paper is sold, labelled "Fly Paper," with directions to put a piece in a plate, and keep it moist. This paper is impregnated with the same deadly arsenic. In Europe a till more dangerous fly paper is sold, which has been soaked in the deadly Cyanide of Potassium. Avoid them *all.* The sticky fly paper, which the makers call "Catch 'em Alive Oh!" is any common paper upon which is spread a thick varnish made by melting together rosin and linseed-oil; it is not dangerous, and acts only mechanically, by cruelly holding the insects fast, until they die. Quassia is stated to be poisonous to flies; we have not had occasion to try it, but have no doubt of its efficacy. A strong tea made of this, sweetened with molasses, may be exposed in plates without fear of danger. It is said that strong green tea, well sweetened, acts as a poison to flies. With regard to the destruction of the mosquitos that may enter the house, we should be disposed to make a trial of the Persian Insect Powder, *Pyrethrum.* A small quantity of this burned in the closed bed room, has been found to destroy every mosquito. In France (as stated in last month), pastilles made of this powder, are used for this purpose. The same end may be accomplished by sprinkling some of the powder upon a few live coals, on a shovel or in any safe vessel. The powder is perfectly harmless to all but insect life. With both flies and mosquitoes, much may be done in the way of prevention. Flies breed in the manure about the stables and pig-pen, and proper attention to cleanliness in the out-buildings will diminish their numbers. No scattered manure should be left about; if all is placed on a compact manure heap, the heat of fermentation will kill the larvæ. Wherever there is stagnant water, there is a breeding place for mosquitoes. It should be generally known, that the "wriggles" so common in rain-water, are the young of the mosquito. It is often the case that rain-water hogsheads or cisterns, are for convenience placed near the kitchen door, to receive the water collected from the roof. These are a constant source of supply of mosquitoes all the season—regular "hatcheries" as the fish breeders say. All such water receptacles should have tight covers, as then the parent mosquito will not enter to deposit her eggs, nor can the wriggles flourish in darkness.

Buying Seed Wheat.—A correspondent in one of the richest wheat-growing sections in Pennsylvania writes us about a certain seed wheat which farmers in his section have hought at the rate of $5 a hushel, to the amount of several thousand dollars. Observe that the inquiry comes aftcr the farmers have bought, and after each one has signed an agrcement to pay the above price on delivery. As to the merits of the wheat we have nothing to say, as it is of a variety with which we are not acquainted and is not known to our dealers in seed grain. We are informcd that "the seller is a good talker" and the samples are "a very pretty wheat," hoth of which statements are very probahle. But how can the farmers in "a rich wheat-growing community" buy seed wheat, upon the quality of which their prosperity depends, of a heretofore unknown kind, and of a perfect stranger! The man must indeed be "a good talker" to talk a community of wheat-growers into doing this. As the seed can not be delivered before it is harvested, there would have heen abundant time to inquire ahont it hefore signing the agreements to take it. The wheat may be all right, and worth the large price asked for it, but they have no proof that such is the fact.

The Goldsmith Beetle.—A young lady at Nepang, Conn., writes us that she has read what we have said about the June-hugs, and would like to know "ahout a heetle of similar shape, hnt larger, with gold and silvery markings." This heetle, popularly known as "Gold-hug" and "Goldsmith Beetle" (*Cotalpa lanigera*), is so common in New England and elsewhere that it is strange that so little is known of its history. Their gilded appearance at once distinguishes them from all related beetles. They have remarkahly sharp claws, by means of which they cling to and hide themselves under the leaves of trees during the middle of the day; at twilight they are very active and feed upon various fruit and forest trees. Beyond the fact that the female lays her eggs in the ground, that the larva lives there and has heen known to injure the roots of the Strawberry, little is recorded in the hooks. It would be a very useful work for some of our young naturalists to watch this insect and endeavor to complete its history.

A Paper-File, or Binder.—Mr. J. Bcattie, Caldwell Co., Kansas, writes us: "Thcre are many who wish to preserve certain papers or magazincs (like the *Agriculturist*, for instance), hut who, like myself, can ill afford the $1.00 or $1.50 charged hy the hook-hinders. A short article on book-hinding, such as could he done at home, would he very acceptahle."—In the *American Agriculturist* for March, 1879, we gave an illustration of a simple home-made binder for magazines. It consists of four pieces of hard-wood, with two bolcs in each. These are placed in pairs, with the papcrs hetween them, and held firmly together by cords which pass through the papers and the holes in the wooden pieces. If sheets of pasteboard of the size of the magazine are provided as covers, they will aid materially in keeping the numhcrs in a neat condition.

Salc of Mr. Simpson's Jerseys.—This was the second annnal sale of selections from the Simpson herd, and consisted of young stock bulls and heifers of his own brecding, with a numher of exceedingly good imported cows, chiefly in calf to "Mercury," the famous and only living son of "Alphea" and "Jupiter," at the head of Mr. Simpson's herd. The numher of animals offered was 37—12 bulls and 25 cows and heifers of all ages. The cows averaged $615.75 in price, and the hulls nearly $444. The highest price for a cow was $2,300, paid hy Paul Sgobel, Esq., of Hyde Park, N. Y., for "Alphea Queen" (13,732), and the highest price for a bull was $1,650, paid for "Zalmas Mercury" (6,983), hy H. S. Muldro, Esq., of Washington, D. C. This sale was held at the Simpson Homestead, within the limits of the City of New York, in what is known as "the annexed district," which lies north of Harlem River, a heautiful spot, within easy reach hy elevated and snrface railroads. The day was snperh. The cattle, in neat temporary stalls, in two rows, under a great tent, could be inspected and handled conveniently. A hountiful collation satisfied appetites rendered keen by exercise and the hracing air. Then at noon, or shortly after, the famous hulls "Mercury" and "Rex" were exhihited on the lawn, and with them a young bnll named "Fame," certainly a most beantiful animal, and famous for his hroad and high "escntcheon," of the first-class Flauderin type. The sale drew together many earnest breeders of Jcrseys, though some were conspicuonsly ahsent. Prices averaged rather high, bnt it was a very good place to buy, for excellent things, of hoth sexes, with famous pedigrees, sold within the reach of any brecder. Neither in the catalogue nor at the sale was there any "buncomhe," or effort to work up prices. As at the Kellogg sales all sales were ahsolute, there was no hy-bidding or upset prices, and everybody seemed gratified and happy. It was like a great family party, and we shall not soon forgct the scene on the lawn in the fresh green and hloom of May, gay with tents and carriagcs, ladies and children, and the two or three hundred guests, bidders and buyers, seated under a second spacious tent, enjoying the jokes and bulls of the jolly auctioneer.

Rust on Wheat.—The yellow or orange-colored dnst that forms on the lcaves and stems of wheat shortly before reaping time, is caused hy a minute fungus. The fungus-plant attacks the wheat some weeks hefore it makes its appearance, and fills the interior substance of the leaves and stems with its fine threads. These threads act as roots, by means of which the fungus or rust-plant ohtains its nourishment from the substance of the growing wheat-plant. There is no remedy for the rust after it has once appeared upon the surface of the wheat. The most effective preventive is blue vitriol or blue-stone (sulphate of coppcr), two or three ounces of this salt to a bushel of wheat. The wheat is soaked in the brine for a short time hefore sowing. There has been much energy expended in the endeavor to find some variety of wheat that is rust-proof. Prof. Brewer, who has charge of the grain statistics in the late census, finds many districts where a variety of wheat has sprung up, that for a year or so is almost rust-proof, but afterwards it becomes infestcd the same as other sorts. As a precaution, it is well to hurn the stubble, thns destroying many spores that would otherwise germinate and continue the pest.

The Death of James Vick occnrred at Rochester in May last. Mr. Vick was of English hirth, hut he soon thoroughly identified himself with horticulture in this country. He was one of the first to avail himself of the new postal laws regarding the transmission of seeds, and his business hy mail was remarkahly large. He was at times editorially connected with the "Rural New Yorker" and the "Horticulturist," and in the later years of his life puhlished a horticultural monthly of his own. Those who havc had the good fortune to bc acquainted with Mr. Vick, do not need to he told of his genial qualities or of his devotion to horticulture in all its departments. In Rochester, one of the chief centers of horticulture in this country, his active presence will be greatly missed, and all over the couutry a vast numher of correspondents, who never saw him, will feel his loss as a personal bereavement.

Ants in the Lawn.—Before us are three letters, the purport of which may he summed up: "Ants have estahlished themselves in our lawn; how can we get rid of them?"—Our Ant experience is not very encouraging; the writer once lived in Texas, where Ants can not he ignored. In the front yard of our house were two ant-hills, one on each side of the path leading from the front door to the gate. We directed the cook to always havc a supply of hoiling water; this was applied several times a day, and the Ants seemed to like it. Other insecticides, including turpentine and chloroform, were tried, but when we came away the colonies seemed to he in a flourishing condition. Since then the Persian Insect Powder (Pyrethrum), has come into use, and we have great hopes of this as an agent in destroying Ants in the lawn. An infusion of it has been found useful.

Hair on the Upper Lip.—A correspondent in a Western State pnts his casc cssentially as follows: "I have a lady friend who has spent several years of genuinc, smothered-up misery, becanse she imagines there is on her upper lip just a trifle too much 'down,' —too good a showing for a fnture monstache. She came to me in an agony of despair, and wanted me to write to those who advertise preparations to remove superfluons hair. I told hcr I helieved them all to he dangerons, hut promised to writc you, and ask if there is any *safe* and *effective* remedy for too mnch "down" on a girl's upper lip."—We have had other inquiries of similar purport, and would say, so far as we are aware, all *depilatories*, as hair-removing preparations are called, are either preparations of *arsenic*, or strong alkaline snlphides. The arsenical compounds are too dangerous to be used under any circumstances; the Sulphide of Barium, and other sulphides, are very corrosive, and are apt to cause great pain, though they are not so dangerous as those containing arsenic. While these will destroy the hair, we can not commend them, as they are not at all satisfactory. With dark hair, the small portion, or "root," that still remains in the skin, shows very distinctly, presenting a much morc unplcasant appearance than the hair itself, and conspicuously advertises that an attempt has heen made to remove it. It is a misfortune to a young lady, and often the source of much mortification to have such a growth of hair on the face; bnt if one has solid acquirements, sweetness of character, and self-forgetfulness, she need not fear that any one whose esteem is of value, will think any the less of her for that which she can not prevent. It is hetter to accept what nature has given, than to attempt to remove it hy applicatio- which may he dangerous, and are rarely successful.—W- may add, that in two instances, whcre very worthy ladies of our acquaintance were troubled with a few straggling hairs upon the face, perhaps 75 to 100 of them in all, they used a pair of tweczers and drew out the separate hairs by the roots with a quick jerk, taking only a few at a time. Cologne-watcr applied and a dusting of common face powder or corn starch soon stopped the slight pain produced hy this operation.

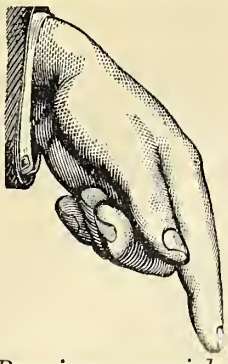
Write When You Send.—We have a dozen or more specimens of plants, stones, etc., that have been sent to be named, and no douht the senders think that they are hadly treated hecause they get no response. Yet, out of this whole lot, there is not one to the ownership of which we have the slightcst clue. Whenever our friends send specimens, it will he safer, even if it does cost them a trifle more, to inclose their letter in the parcel, and send the whole by letter postage. When this is done, we have the whole story hefore us, and can reply by mail or in the paper, as secms best.

Late Fodder-Corn.—Corn sowed early in July in good soil, in drills, with some compost of yard manure, or fertilizer like superphosphate, a fish or flesh manure, in the drill, will be in cxactly the hest condition for cutting and curing for winter fodder by the time of early frosts—say September 15th. The system which it is best to follow, depends upon the kind of manure at hand. If that he a well-rotted, fine compost of yard manure, or of other nitrogenous substances not likely to hurn the seed hy fermenting, make furrows ahout four or five inches deep, thirty inches apart, and spread the manure in them liberally. Scatter in the seed by hand or hy seed-drill, at the rate of 24 to 30 kernels to the running foot. When we must depend upon some commercial fertilizer, we have our choice between guano, a nitrogenized superphosphate, fish manure, "tankings," or something of the kiud. Such are well called "hand manures" sometimes, and when spread in the drills with rather a liberal hand, using 250 to 600 lbs. to the acre, according to the strength of the fertilizer, it should he mixed with the soil in some convenient way hefore sowing the corn. Cover seed lightly with a plow. A convenient implement for mixing a fertilizer in the drill is made in a few minutes where red-cedar trees ahound, by taking a stem ahout eight feet long, having hranches on all sides, and trimming them off, leaving strong spurs ahout six inches long. This, dragged by a horse, hutt-end forcmost, and guided by a rope or chain attached to the small end, will completely mix the fertilizer with the soil in the drill. The guide-rope in the hand of the driver is important, for the butt may strike a root or stone, which might cause the stick to hound or turn a somersault, and hit the horse; with the guidc-rope the stick may he lifted over obstructions, turned at the end of drills, and guided conveniently.

Plants for a Grave.—"E. H. C." You do not state whether you have in view a hurial lot, or merely the grave itself. If the grave only, we would advise setting several small plants of the European Ivy, and as they grow, train them to form a solid mat of dark grecn verdure. Ivy treated in this manner will endure the winter in localities where it would he killed if it grew npon buildings. If flowers are desired, they should be of kinds that will take care of themselves, and be placed near, rather than on, the grave. Next autumn you can plant Crocus and Snow-drop bulhs. The perennial Candytufts, the White Moss Pink (*Phlox subulâta*, var.), *Astilbe Japonica*, *Deutzia Gracilis*, the White Bird's-foot Violet (*Viola pedata*, *alba*), and the white variety of *Anemone Japonica*, are among the desirable plants for decorating the lot, that may he set in the spring.

Sending Plants for Name.—Our friends often attempt to have plants from a distance reach us in a fresh condition. When they wrap up a frcsh plant, or a part of one, it usually reaches us in a partly decayed state, and often in an entirely useless condition. We would hint to those who send plants to be named, that we can identify them much more readily if they arc first properly dried, than we can in this half-decayed state. Please put a bit of the plant, showing its lower leaves, if these differ from the upper, a flower cluster, and the fruit (or seed pods), between folds of newspaper, or between the leaves of an otherwise useless book, placing them under moderate pressure until dry. Such specimens can then reach us in a condition in which they may he readily examined.

Kansas Flowers.—"W. S. R.," Washington, Kans. Your "Earliest Spring Flower," is the Carolina Anemone (*Anemone Caroliniana*), abundant all through the Western States, and vcry variahle in color, from deep purple to nearly white, as your specimens show. Thank you for sending such well dried specimens.



All Premiums, special or otherwise, were to close before July 4th, but the demands for the following are so very large and pressing, that the Publishers have decided to continue the Offer a month longer, or up to August 4th.

SPECIAL PREMIUMS

For JULY.

Any person sending a Subscription to the American Agriculturist for one year, at the regular rate of $1.50 *a year (or two Subscriptions for half a year, at the same rate), will be presented with* **any one** *of the following, delivered by mail, post-paid, to any part of the U. S. or Territories (the Pot-grown Plants excepted):*

No. 1.—Any one of the One Hundred Good Books described on pages 124 and 125 of the March number of the *American Agriculturist.* There are many excellent books in that list, well worth $1.25 to $1.50 each, and only sold for these prices.

OR,

No. 2.—The American Popular Dictionary, described on page 124 of March *American Agriculturist.*

OR,

No. 3.—24 Bidwell Strawberry Plants, post-paid; OR, 15 Pot-grown Bidwell Strawberry Plants, by express, unpaid, as described in March *American Agriculturist*, **page 124.** This is one of the best, probably the best, of the NEW Strawberries before the public—on account of its many good qualities, both for a market and home fruit, and its adaptation to cultivation throughout the country generally.

OR,

No. 4.—The "American Agriculturist MICROSCOPE," described on page 173 of April *American Agriculturist.* A very convenient and useful instrument.

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No. 5.—Yankee Farming. The Tim Bunker Papers—(Price $1.50).—Tens of Thousands of our readers, who have read the letters of Timothy Bunker, Esq., that have appeared from time to time in the *American Agriculturist* **during Thirty Years past, will be interested and profited by the perusal of this work.** ☞ It is a quaint, most interesting book, giving the experiences, observations, etc., of "Timothy Bunker, Esq.," of Hookertown, Conn. It is full of good, practical suggestions on farming, etc., told in a way that they will "stick." No other book on American farming contains so much entertainment with instruction. With illustrations by Hoppin. Finely printed on good paper and well bound in cloth, with gilt title and side stamp.

The Plum Curculio.—"B. D.," Passaic Co., N. J. *Don't*—that is, don't soak corn-cobs in kerosene and hang them in the trees with a view to keep the Curculio from your plums. We have seen it tried, and know it will not work. The Curculio will laugh at this, and all other bad smelling things to drive it away from your plum and peach trees. Nothing short of catching and killing will answer. It is called "Plum Curculio," but it is a great pest in the peach orchard, attacking the fruit soon after it has set. Jarring the trees, catching the insects on a cloth spread below, and then killing the insects thus caught, is the only method. All others have proved useless.

Tuberous Rooted Grapes.—In a notice of these new vines, p. 251, last month, we said that they "were on the way," and should have said "on the way to France." Several have taken this to mean on the way to this country, and we have had a number of inquiries as to the price, etc. We would say, that the tubers have not been received in France at the last accounts, and they are not likely to come this year. The French Horticultural Journals contain many complaints that the seeds do not germinate. So far as we are informed, these new vines are, even in France, things of the future.

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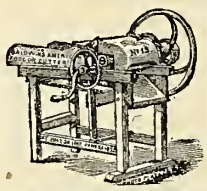

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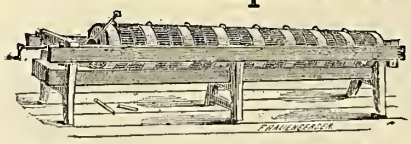

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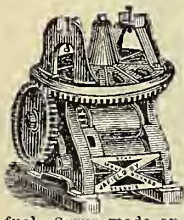

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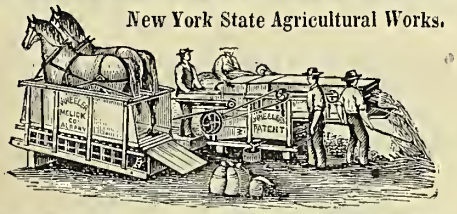

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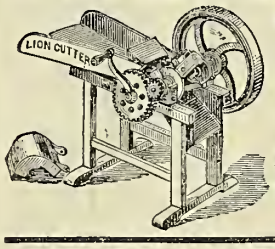

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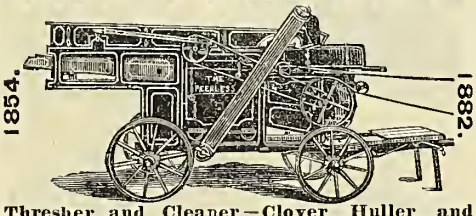

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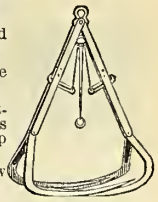

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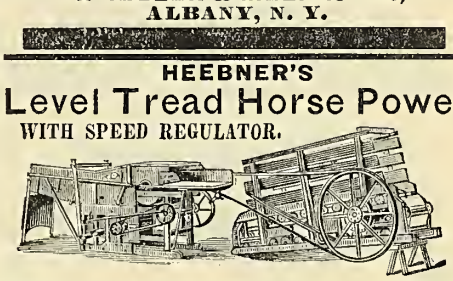

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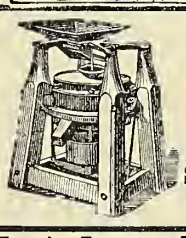

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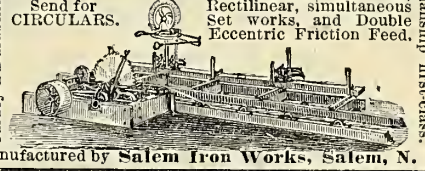

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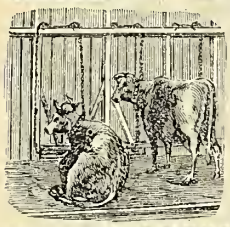

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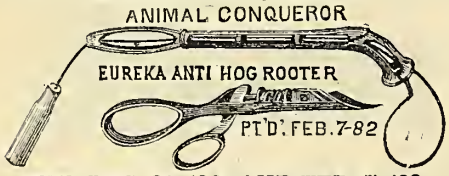

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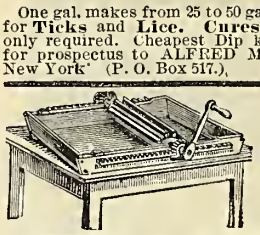

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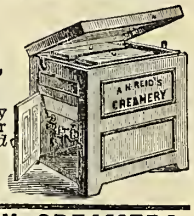

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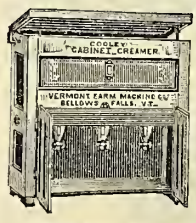

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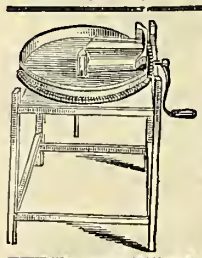

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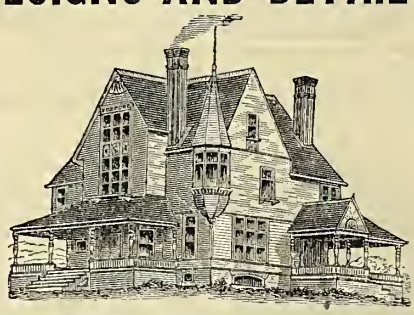

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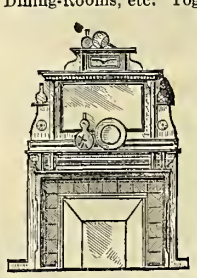

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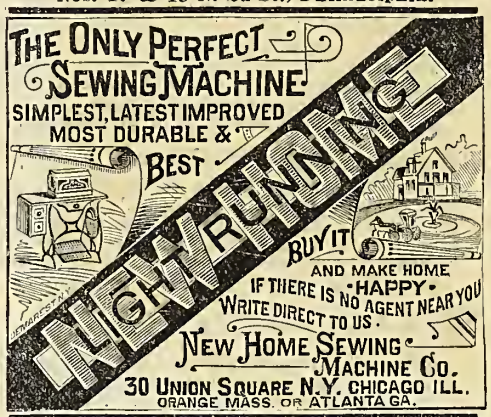

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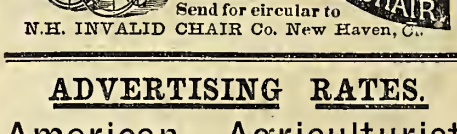

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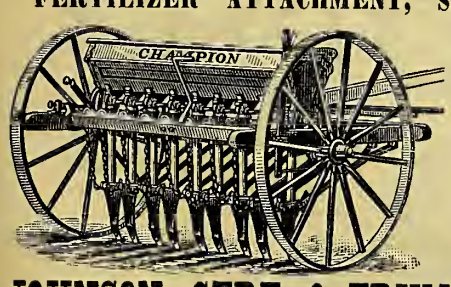

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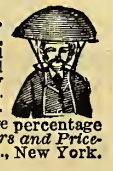

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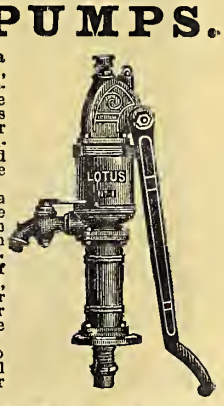

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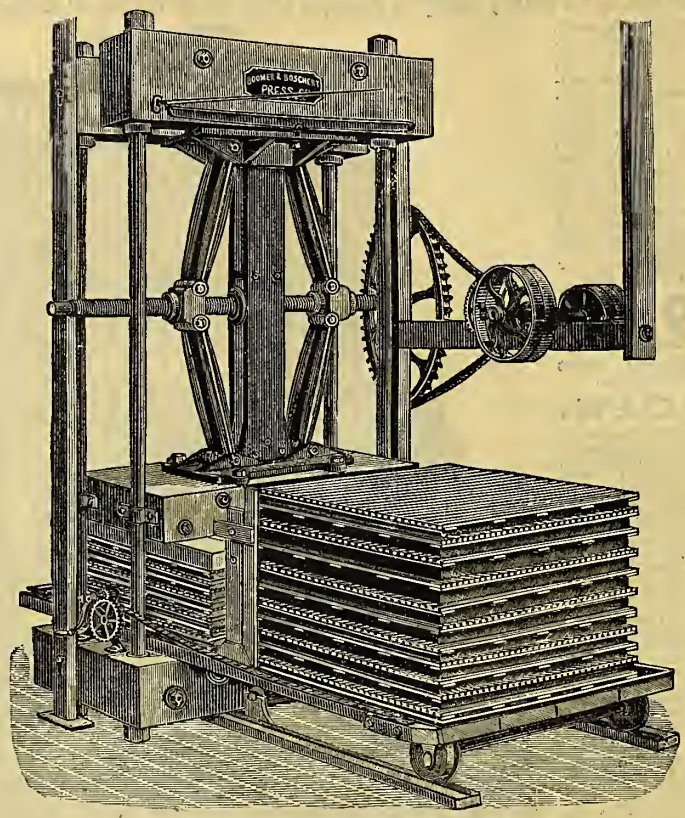

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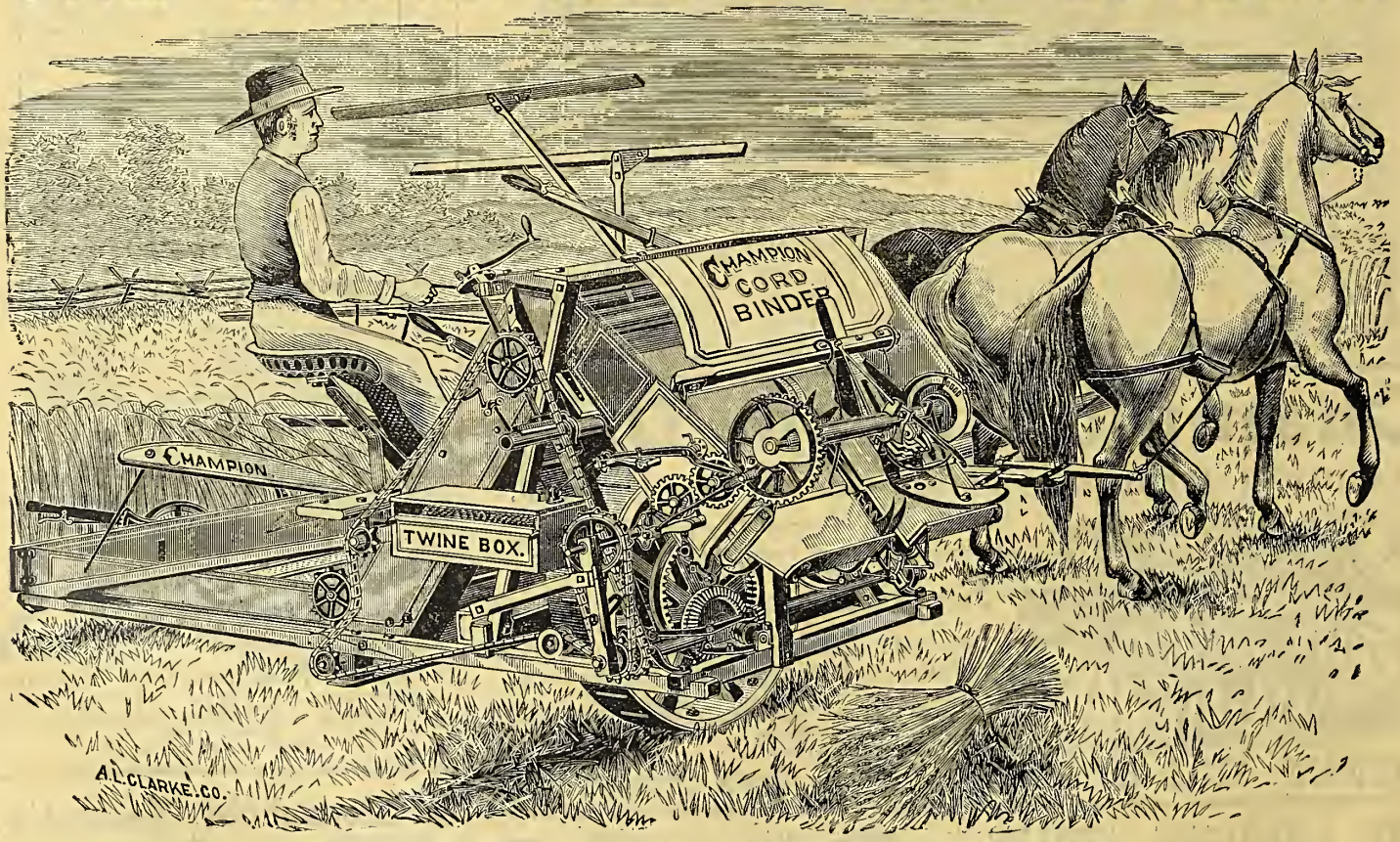

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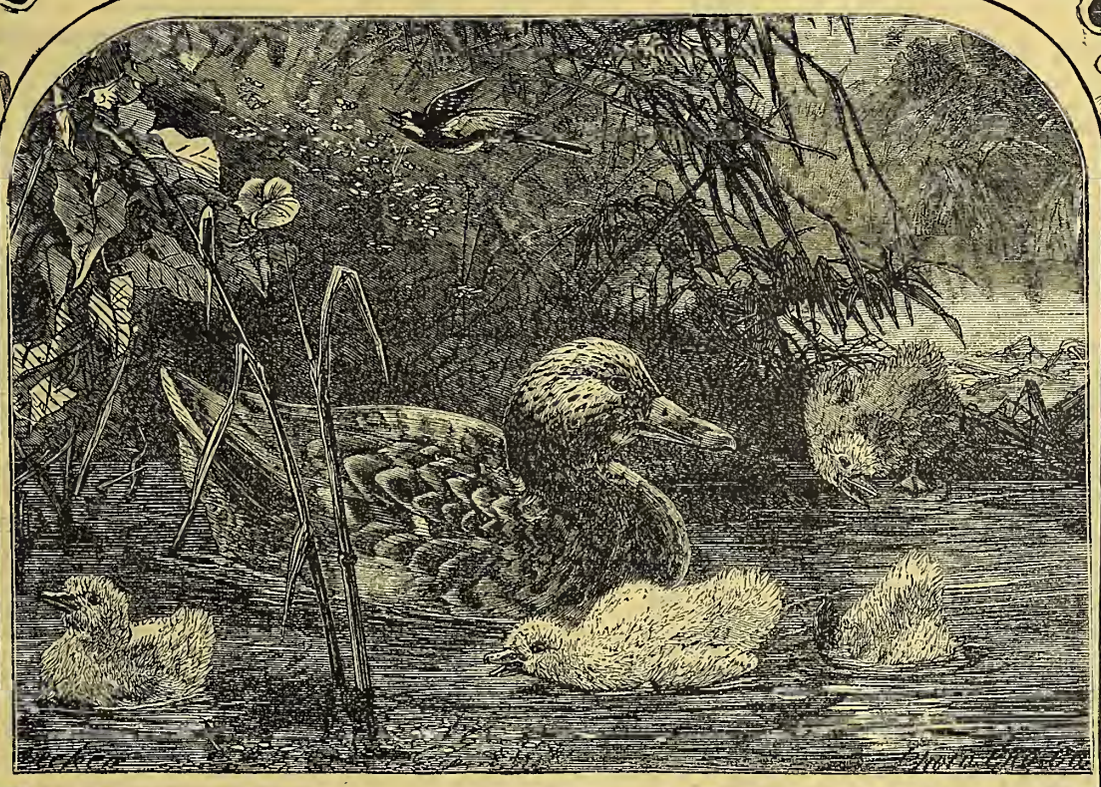

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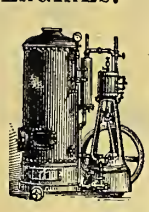

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AMERICAN AGRICULTURIST.

NEW YORK, AUGUST, 1882.

Suggestions for the Season

Early Dividends.

Capitalists are fond of buying stock that yields dividends, and are quite content now to get bonds that will pay four or five per cent annually. A neighbor of ours spread a barrowful of manure taken from under the floor of a horse stable, about the middle of April. The manure or earth had received the urine of a horse for some months, and represented the value of that commodity. It was spread on about a square rod of old meadow, that had received no manure for a dozen years or more. The grass took a fresh start soon after the application, and clearly defined the dressed plat, by its dark green, and luxuriant growth. On the twentieth of June, the grass is so heavy, that it is partly lodged and is ready for the scythe. The yield of grass is certainly quadrupled by the top-dressing. Sixty days from the date of investment, he has a dividend worth at least one-half the value of the manure. He will get a second crop this season, which makes another dividend. The sod below is enriched with a great growth of grass roots, which is an increase of capital, and will continue to give fair dividends for several years to come. He is so well pleased with this spring's investment, that he has enlarged the area of top-dressing on the meadow, and applied fresh manure from the stable, made up of leaves, and horse, and cow dung, on the twentieth of June. The grass cut on this second plot was very thin, certainly less than a half ton to the acre. He confidently expects a dividend from this investment in about sixty days, and permanent increase of capital. Now is it not much better for a cultivator to put his capital upon his own land, under his own supervision, and get good dividends, early and often, than to invest in railroads, steamboats, factories, or Wall Street? Investing at home, he knows just what he is about, and with an average expenditure of brain and muscle, he can command early dividends, and keep them coming. The farm is a machine to make money. Let us keep it in good repair, well oiled, and turn out the dollars.

Late Cultivation of Corn.

There is a great difference in the management of the corn crop. Weeding, half-hilling, and hilling, were the old names in New England, for the three dressings the corn crop usually received. Frequently it was cultivated only twice, and the weeds made a thick mat between the corn rows, and very much reduced the yield. It was as much detriment to the land, as to the corn, for it stocked the ground with foul seed, which increased the labor of tillage for years afterwards. We have found it profitable to continue cultivation until the ears throw out their silk, and even later. Once in two weeks is none too often to stir the soil in the early part of the season. The later cultivation in August, should be the mere scratching of the surface, to break the crust and destroy weeds. It is poor economy to let the weeds get a hold, and still worse to go to seed. In our corn patch, we have already destroyed five crops of weeds, and July is not here.

A Hint about Weeds.

In harvesting Indian Corn and Wheat, we cut them long before the grain—the seed, is ripe. When the grain in either is fully formed, the stalks are cut; experience has shown that the ripening process goes on; the stalk contains sufficient nutriment to perfect the grains, and it does this after the plant is cut away from the root. Indeed, the grain thus treated, often comes to greater perfection, than if the plant were left until the seed is fully ripe. What takes place with these crop plants, also occurs with weeds. Many weeds, if cut up while in flower, still have nutriment enough in their stems and leaves, to perfect and ripen a crop of seeds. It therefore happens, that the mere cutting up of many weeds, and leaving them to dry upon the ground, does little towards their extermination. The common Purslane—or "Pussley," for example, has remarkable vitality, its very succulent stems will remain alive for weeks, and even continue to grow after they have been deprived of the root. It is one thing to cut up weeds with the hoe; it is equally important, and it should always be done in gardens, to gather up the weeds by the use of a rake, and carry them to a brush heap, where they will ultimately be burned.

The Water Supply.

If we have a drouth, it is wise to examine and "locate" all moist spots, springs which do not fail, and indications which may lead to water. The time is favorable for deepening wells and opening hidden springs in pastures, so that cattle may always have water. The failure of water in a pasture is often a serious thing; cattle suffer greatly, and it is much trouble to drive them to water or bring water to them. Artificial basins may be constructed to hold the water that falls in summer showers. A clayey spot—if possible a natural basin—is selected, the basin formed, and pigs fed upon the ground when somewhat moist to pack it down.

Care of the Root Crops.

Sugar Beets and Mangels if early sowed, will need little care. They ought not to stand too thick, however, and it would certainly pay to go through the rows, thinning out all superfluous plants, whether beets or weeds, leaving the plants 6 to 8 inches apart. If the leaves are not so large as to forbid horse-hoeing, this should be done and the crop "laid-by." No root crop should ever be left after horse-hoeing, without a man going through it immediately after, to lift and straighten up any plants which may have been trodden upon, covered with earth, or injured in any way. Ruta-bagas, and any turnips in drills, need the same general culture. One of the great advantages of the introduction of roots into the rotation is, that when properly treated, no weeds ripen seeds. Even Red Sorrel and Snapdragon succumb to two or three years cropping with Mangels or Swedes. This advantage is often lost by careless cultivators, and nothing offers surer evidence of heedless farming. The crop itself may be very fine, but if kept clear of weeds, it would be enough better to pay for the trouble, and the weeds would then be where they will make no more trouble forever.

Turnips may be sown as late as the middle of August, but the land should be in good heart, and good tilth. Swedish Turnips (Rutabagas) sowed as late as the first of August, will usually make a crop delicious for the table, and, though small, bring a good price. Thus they are often used to follow early potatoes by market gardeners, though by them usually regarded as a farm crop.

Reclaiming Swamp Land.

Swamp lands, which are often accessible to men and teams only at this season, when reclaimed, ordinarily make the best hay land of the farm. This reclamation is accomplished *first* by getting rid of the water; *second*, by plowing and grubbing out the bogs, and the roots of alders, and other woody growths; *third*, by a succession of crops which require tillage to kill weeds, and to ameliorate the surface, before seeding down to grass. Ditches must be made deep enough to lower the water level at least two feet, and if possible, three feet below the surface. They should be located so as not only to drain, but to cut off springs around the outside of the swamp. It will often be found that much of the water comes from a level some two or three feet higher than the general surface of the swamp. This should be kept by itself, and led off around the outside of the swamp, because after the swamp is drained, and cleared, and laid down to grass, it may be found very desirable to irrigate it, and then the water will be just at hand. We do not know much about irrigated meadows in this

country, but it is certain that three or four times the quantity of grass may be cut from them than will grow without the use of the water.

The width of the ditches should ordinarily be considerable, not to carry the water only, but because the sides are likely to slip down, and gradually fill up the channel. For this reason, it is well to slope the sides of the principal ditches at an angle of 45, or even of 30 degrees. These sides will sod over after a while, and it is only thus that open ditches can be permaneutly held in shape, without the aid of stone walls. Lateral ditches, often at once, and almost always after a few years, may be tiled, and so only the main ditches remain open.

Preparation of the Wheat Ground.

Wheat demands for its perfect development, among other favorable conditions, besides showers and sunshine, depth and richness of soil, thorough tilth, and freedom from excess of moisture. Soil that will yield good clover will bear good wheat. Wheat follows corn very well, but this involves rather late sowing. Where there is a market for new potatoes, which, as they are intended for immediate use, may be freely manured, the potato ground—well plowed and harrowed with a dressing of bone-dust, superphosphate, or, if there is much organic matter in the soil, with a dressing of lime—forms an admirable seed-bed for wheat. One of the best rotations, including winter wheat, is corn on sod, early potatoes, wheat, clover, and timothy, the grass to be mowed as long as it is profitable—the manure being applied in the hill for corn, and put on broadcast very liberally for the potatoes. Winter wheat follows none of the usual root crops well, for it ought to be sowed and up before the middle of September, although it often does well sowed nearly a month later.

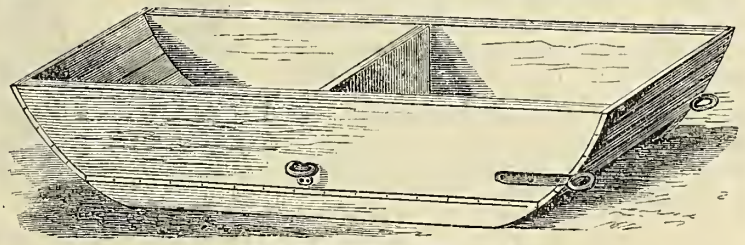
When wheat follows clover, a crop of clover-hay is often taken off early, and a second crop allowed to grow, which is turned under about the first of August for wheat. In case we have very dry weather in July, the growth of clover will be meagre. If, however, the clover stubble be top-dressed at once, as soon as the early crop is cut, with a muck and manure compost, or any fine compost, "dragged in" with a smoothing harrow, the second crop will be sure to start well, while none of the manure will be lost. Lime, or ashes, if they can be obtained, are to be spread after plowing under the clover and manure, and thoroughly harrowed in. Forty bushels of ashes to the acre is about right, and where hearths of old charcoal pits are accessible—ashes, charcoal-dust, and baked earth, all excellent—they form a good substitute for ashes and for lime. Sixty to one hundred bushels of evenly dry-slaked lime, which, if it could have been mixed with an equal quantity of soil or sods during the slaking, would be all the better, is a usual application.

The soil, and particularly wheat ground, is not well enough tilled in this country. We plow 14 to 16-inch furrows, and use a skim-plow; this leaves the surface so mellow, and covers the sod so perfectly, that we think it hardly needs harrowing at all, and only smooth it over with a harrow, and let it go. The skim-plow is a great advantage, but we should take narrow furrows. The Scotch and English plows are a great deal better than ours for this sort of work, for they turn deep narrow furrows, and give much more thorough tillage.

The following practice, on heavy land especially, is excellent: Turn under the first crop of clover as deep as possible, just before it is in full blossom; cross-plow the first or second week in August; then put on 75 bushels of lime or more, and harrow it in lightly. Sow early after a soaking rain, and apply at the time of sowing 250 pounds or more of superphosphate to the acre.

Peat and Muck for Manure.

When one has peat or muck in any form upon his own farm, it is criminal almost not to make use of it, and if it can be bought at any reasonable rate—say at twenty-five cents a load—it will always be well to buy it. It should of course be dug when the water is low in the swamps, and the task of getting out muck may aid essentially the work of reclaiming the swamps. Thus the main ditch may be dug the width of a cart track. By making a narrow preliminary ditch to carry off the water and dry the ground, a horse and cart may be brought into the ditch and the muck carted directly off to dry ground, where it can dry and perhaps be exposed to a winter's freezing and thawing before using in the compost heaps or barn-yard. In all such ditching we must begin at the lowest end of the ditch, so that there shall always be a free outlet for the water. A boat, to be used in removing muck from the bed through a water channel to a hillside, is shown herewith. It is of pine boards nailed firmly to side planks braced by a cross plank at the middle. If made 9 feet long, 4 feet wide, and 16 inches deep, it will float a ton of muck. A runner is placed under each side, so that the boat can be drawn upon the land. A hook or eye should be placed on each side, and others at one end, by which the boat may be drawn. While floating, the boat is moved by handspikes. The place where the muck is heaped to dry should be as near as possible to the bed from which it is dug.



A BOAT FOR GETTING OUT MUCK.

The muck may be very peaty, or the material really may be *peat*—that is, consisting almost entirely of vegetable matter and ash—whereas *muck*, as the word is applied in the United States, is used to mean such as would be of little or no value as fuel, from the amount of soil or sand or calcareous matter in it; but is useful as manure. The peaty mucks are greatly benefited by being treated with lime—in fact it is only by acting upon them with lime or ashes that they can be made rapidly fit for use in composts or for application to the land. The old rule to slake stone-lime with strong brine, adding only brine enough to dry-slake the lime, is a very good one. Such lime may be depended upon for the best results when composted with muck.

Live Stock in Midsummer.

The latter part of summer is often very trying to live stock. Pastures are short, old grain is high, the new not yet fit to feed. Milk may be in great demand and the farmer loath to cut in upon his corn fodder, intended for curing, to feed off the aftermath; he is lucky who can turn his young stock of cattle and horses into mountain or high wooded pastures, where they will have water and may make at least half a living upon underbrush, etc. Early sowed fodder corn comes in well now for milch cows, and there is really no other good use for it. If cut for curing it is hard to dry without molding and decaying, and if left to stand until after the middle of September, when it will cure well, it will be as woody and tough as "corn stalks." When fed to milch cows, fodder corn ought to be cut short and sprinkled with two to four quarts of corn meal per cow each day. There will then be no complaint of the quality or the quantity of the milk. If these are fed without the meal, the milk will surely be thin, and the cows are exhausted by the increased flow, and soon fall off in yield.

Horses in pasture are often extremely annoyed by flies. If they can stand when not in use in dark sweet stables, by all means turn them into the pasture only at night. Gnats and mosquitoes are of little annoyance to horses, but the larger day-flies, and the *Œstrus*, or Bot-fly, set them almost crazy.

Ewes and lambs are usually separated in August, and while none of our domestic animals is more often used as a type of maternal affection than the ewe, yet the agony of separation will be of short duration, and not especially painful if the two flocks, dams and lambs, can be pastured so far apart as not to hear each others calls. It is well to put with the lambs a few wethers as flock leaders, or a ram or two if there is danger of annoyance by passing dogs. The ewes should be penned and their milk drawn enough to relieve their udders several evenings in succession after taking the lambs away. Wounds on any kind of animals are liable to be fly-blown and very annoying. The best treatment that we know of is an application of strong carbolic soap. That which is sold as sheep dip is very good; but be careful not to use the arsenical sheep dips or any thing of that kind. Soft soap or semi-solid soap strongly impregnated with crude carbolic acid is good, and any one can make it. It will be found good for all kinds of raw sores, galls, bites, scratches and the like on man or beast.

The place for pigs at this season is in the apple orchard; the falling fruit is wormy, unless indeed a gale shakes off sound fruit, and the pigs unconsciously slay thousands of injurious insects.

The Manure Harvest.

In the midst of the harvest of grain, and grass, and tubers, we must not forget the compost heap, in which we garner and store the unsowed crops of a future season. The saying that "anything that grows in one summer, will rot before the next," is a safe guide in collecting vegetable matter for the compost heap. When sods, muck, and weeds form a part of the heap, it is not alone the material which we are assiduous in collecting, and put into the heap, that constitutes its whole value. The fermentation induced by the dung and liquid manure, and the action of the lime or ashes added, work upon the earth, adhering to the roots of the weeds, and forming a considerable part of both sods and muck, and develop an admirable quality of plant food. Hence this element of the compost heap, which is generally over-looked as possessing any special value, should never be wanting. It has, moreover, its own offices to perform, in promoting decay, in the formation of humus, and in preserving, locking up, and holding on to valuable ingredients of plant food.

The compost heap should always be laid in even layers, and each layer should go over the entire heap, for thus only can final uniformity be had. We do not mean special-purpose composts, but those made for general farm crops. It would be well if every particle of dung, liquid manure, straw, litter, leaves, weeds, etc., could be worked together into uniform fine compost, and there is really no substantial reason why this should not be done. The gardener would plead for certain special composts. It might perhaps be well to make a special hen-manure compost for corn in the hill, and taking the general compost as a basis, to make one for turnips, by the addition of a large percentage of bone-dust. All this may be done—establish once the rule to compost everything of manurial value, and we have in prospect an abundance of farm-made fertilizers at all times, and for all crops—victory over weeds, a good place for decomposable trash of all kinds, a sacred burial ground for all minor animals and poultry, whose precincts need never be invaded. There will besides be no stagnating pool in the barn-yard, for all liquids will go to the tank, to be pumped over the compost heaps—no nasty, slumpy barn-yard, for everything will be daily gathered for the growing compost heap, and the harvesting of the manure crop, and its increase day by day, all the year round, will be a source of constant pleasure to master and men.

Fruit Ladders.

The number of fruit ladders that we have from time to time figured, is very large. As a rule, the ladder should be self-supporting, and not lean

against the tree. An old fashioned step-ladder, made with wide steps, so that the feet of the picker will not soon get tired, is one of the best. Let the upper step be made broad, to hold a basket; one with a ladder of this kind, and with a hooked stick to pull the branches to him, can reach the choice fruits which grow on the outer branches.

Propagation by Budding.

As a school-master is obliged to begin each year with a primary class, so in a journal like ours, it is necessary to now and then repeat certain rudimentary lessons. There are many—probably the majority—of our readers who look to the *American Agriculturist* as the sole source of their information

Fig. 1.—A BUDDING KNIFE.

in all that relates to agriculture and horticulture. When these ask us to tell them how to layer plants, how to prune, how to graft and to bud, and to do other operations, they will not be satisfied if we refer them to certain books for their information.

Grafting and Budding

have the same end in view, and the operations are essentially the same, but differ greatly both in the manner and the time of performing them. In both, budding and grafting, we place a variety that we know and wish to increase, upon a tree of the variety of which we know nothing. It is a well known fact that our esteemed varieties of fruit are in an unnatural condition; so that when we plant the seeds of these, there is no certainty that the trees thus produced will bear fruit like the parent tree—that from which the seed was taken. The seedlings of our cultivated fruits may produce better kinds than those from which the seed was taken, but generally the fruit will be poorer, and there is no certainty about it. It is on account of this uncertainty that we propagate the varieties that we know, by grafting or budding them upon seedlings about which we know nothing. In grafting, we use a cion, a twig upon which are *several buds*, of a known variety, and insert it upon a tree raised from seed. We plant this cion, or cutting, not in the soil, where it may take root, but upon a tree which already has roots. In budding, we plant a *single bud* upon another tree. The operation of

Budding is Sometimes Called Inoculating,

and the use of this term, "inoculating," has given rise to an incorrect popular notion. In the inoculating of animals, including the human subject, we introduce a virus, or disease, which affects the whole system, and causes certain changes to take place within it. Many have an idea that in "inoculating" a plant, a similar influence is exerted, and that the nature of the plant is somehow so changed by the operation, that it will afterwards bear good fruit. This view of "inoculation," or budding, is entirely erroneous. Had the bud been left on the tree which bore it, it would have expanded, and pushed from it a green shoot, which in time would ripen and become a branch, and ultimately bear fruit. When we remove the bud from its tree, and plant it in another tree, it expands, a shoot appears; this grows and branches, and the bud, in time, becomes the tree, as all the rest of the tree in which it was planted is cut away. In budding, we need

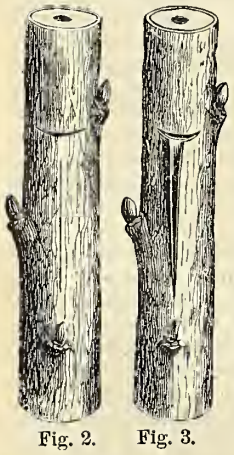


Fig. 2. Fig. 3.

The Stock and the Buds.

The stock, or plant in which we insert the bud, is a young tree of the same kind as the bud, or of a nearly related kind. Peach, Plum, and many other stocks are young trees raised from seeds; other stocks, as the Quince for budding the Pear, and those for the Dwarf or Paradise Apple, are young trees produced by layering. In budding the Peach, the stocks are from seeds planted the spring of the same year; the plants, with good cultivation, will be large enough to bud in August or September. Apple stocks and others grow for two or more years. But we must now assume that one has his stocks ready; the next step is

The Selection of the Buds.

It is all important that the buds be true to name; hence they should be taken from bearing trees. When a fruit tree has completed its growth for the season, that is, when the branches have ceased to increase in length, there then appears in the *axil* of each leaf—the angle where the leaf joins the stem—a bud. Examine any shoot of the current season's growth, and these buds will be found; those near the end of the shoot will be immature, those at its base small and poorly developed, while between these extremes will be several well-formed, plump buds. In securing the buds, take always the shoots that have grown this year. Such sticks of buds may be cut, and if prevented from drying, may be kept in good condition for a week or ten days. When the shoots are cut, the leaves should at once be removed by cutting through the petiole, or leaf-stalk, half of which should remain attached to the shoot. Such sticks of buds may be kept in damp moss, damp sawdust, or be wrapped in wet cloths. If simply moistened and inclosed in a tight tin box, they will keep well.

The Time for Budding

varies with the kind of fruit, the locality, and the season. The usual succession is Plum, Pear on Pear stocks, Apple, Cherry, Pear on Quince, and Peach. The precise time for each kind is, when the bark on the stock will "run,"—that is, when it will readily part from the wood, this being the condition necessary in the stock; of course the buds must be plump and well formed.

The Operation of Budding

is a very simple one, and those who make a business of it become very rapid budders. In the largest nursery in the Southern States, the best

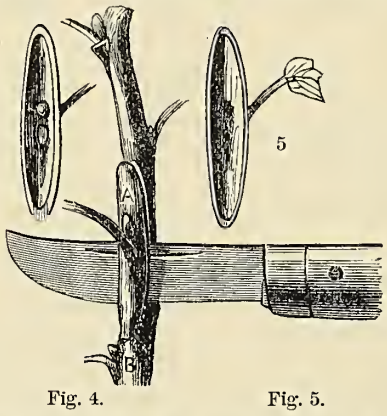


Fig. 4. Fig. 5.

budder is one who was formerly a slave. In the large Peach nurseries, the budder has two assistants; one goes ahead and prepares the stocks, by rubbing or cutting off twigs, and removing leaves from the place where the bud is to go; the other follows and ties the buds. Of course the amateur who inserts but a few buds, will perform all these operations for himself. It is a matter of importance to put the bud on the right side of the stock. If the rows run east and west, the bud is inserted on the north side, and when they run north and south, on the west side. It is also important to insert the bud as low down on the stock as a proper place can be found for it.

The Budding-Knife

is the only implement used in budding, and every budder has his own notions as to the proper form of the blade. Budding-knives, like that in fig. 1, are made with a thin ivory point at the end, for the purpose of lifting the bark, but experienced budders use the blade for both making the cuts and lifting the bark. The first step is, to select the place for the insertion of the bud. Two cuts are made upon the stock, down through the bark to the wood; one crosswise, and the other extending from this downwards, forming a T-like incision, as in fig. 2. Figure 3 shows the corners of the bark lifted, ready for the bud. The bud is now to be separated from the stick, though some budders first cut the bud, and hold it between the lips until they have made the cuts upon the stock. Figure 4 shows the manner of removing the bud from the stick; the knife enters at *A* half an inch above the bud, and, by a downward cut, comes out at *B* three-quarters of an inch below it. In making this

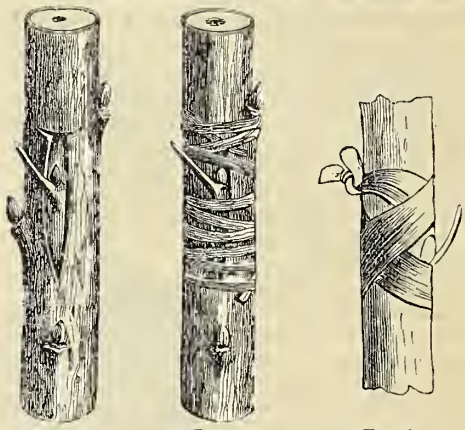


Fig. 6. Fig. 7. Fig. 8.

cut to remove the bud, as little wood as possible is to be taken off with it. When the bud is removed, it will consist of, besides the bud itself, a shield of bark, a portion of petiole or leaf-stalk that has been left attached, and a small portion of wood removed in the cutting, as in fig. 5. European budders direct the removal of the attached piece of wood, but our budders pay little attention to it, as unless it parts very readily from the shield of bark, the base of the bud may be injured by its removal. Holding the shield of bark and its bud by the leaf-stalk as a handle, it is placed in the incision (fig. 3), and pushed well down. If the stock is in the right condition for budding, the pushing of the bud to its place will be easily done, and the bark upon the stock need only to be lifted at the corners of the cut, to allow of the entrance of the shield; the bark at the upper end of the shield is then cut square across, so that it may fit the horizontal cut on the stock. Figure 6 shows the bud in place, and ready to be tied. The tying material is usually bass-bark, moistened to make it flexible; woollen and cotton yarn are both used, and some budders use thin and flexible corn-husks, selected from the interior layers at husking time. Figure 7 shows one method of tying buds, and fig. 8 another. In all cases, the object is to hold the parts in closest possible contact, and yet not injure the bud. In about 10 days, or two weeks, after the insertion, the buds must be looked to; the stock is still growing, and a serious strangulation may occur if the ties are left as they were applied. At this time it may be ascertained if the operation has been successful, or if the bud has "taken." If the bud and its bark look shrivelled, and the attached leaf-stalk is still remaining and dead, the operation has failed. If, however, the bud is still plump, the shield of bark bright, and the bit of leaf-stalk has dropped, the operation is successful. In case of failure, and the stock is still in good condition, another bud may be inserted; otherwise the stock may be left until next spring, and then be grafted. When the buds are found to be all right, the tie may be loosened, or cut through, to allow of the growth of the stock. The inexperienced will do better to loosen the knot sufficiently to allow of the increase in diameter of the stock, but retain the tie to protect the bud until later. When a bud has taken, and the ties loosened, nothing more is to be done until the following spring, when all of the stock above the bud is to be cut away. It is, of course, important to properly label the budded trees, that the kind of bud inserted may be known. In nurseries, this is done by labelling the rows, but

in small operations, the stocks may each he marked by a label with the variety of bud inserted.

Making Vinegar.

In a large orchard, the best use to make of windfalls, is to convert them into vinegar. We know an orchardist in a Western State, who makes a large share of his crop into vinegar; he finds it to his profit to look after the wind-falls. He keeps a portable or hand-mill for the purpose, and by collecting, grinding, and pressing the fallen fruit, adds materially to his vinegar crop in the course of the season. He does not mention the fact to those who buy his vinegar, but tells us that this practice goes far to keep the Codling moth in subjection.

The Peach Harvest,

On the whole, promises to be large in the noted Peach districts. Within a few years, many have planted Peach orchards in localities not heretofore regarded as "Peach regions," and these will probably market their first crop this year. Comparative novices will have to compete with experienced growers, and must conform to established customs. Crates for sending Peaches a long distance are preferable to baskets. The standard crate consists of two ends and a middle-piece of ⅞-inch stuff. These pieces are 7½ by 14 inches. For each side of the crates, use four pieces, 2½ inches wide, and 23½ inches long; for the top and bottom each, one piece 6½ inches wide, and 23½ inches long, the sides, top, and bottom, of ⅜-inch stuff. The strips should be well secured to the end and center-pieces by nails. If the crates are to go a long distance, a strip should be nailed across the top and bottom at each end; this, when they are stacked upon one another, will allow of sufficient ventilation. In packing Peaches, more care is required than with any other fruit; a single over-ripe Peach will spoil the sale of a crate. Hence, Peaches, as they are picked, should be turned out upon a table or bench, and carefully examined; every one that may become soft before the fruit will be sold, should be rejected. In filling the crates, they should be so full as to require some pressure to bring the top to its place. Assort the fruit, but let each crate be of the same quality all through. It is customary to make three grades, distinguishing the "extra" by "twigging,"—that is, by placing a leafy twig of the Peach-tree upon the fruit before the cover is nailed down. Mark the crates plainly, with the name of the consignee and that of the shipper, and always inform the commission merchant in advance of the shipment by letter or by telegraph.

The Grapevine in August.

Most of the active work of the vineyard is over, still the vines will need some care. The laterals may still need pinching, and late shoots may push where they are not wanted, and must be broken off. Most of the troublesome insects of this season are large, and readily noticed, so that the only remedy, whether for the large grapevine caterpillars, or the beetles mentioned on other pages, hand-picking can be applied. The chief troubles of the grape-grower this month, are the Leaf-hopper, incorrectly called Thrips, and Mildew. The little insect, which in some places rises in clouds as one passes among the vines, and appears of a general dingy-white color as it flies, is, when caught and examined, found to be handsomely marked with scarlet. It remains attached to the leaves, sucking the juices, in its early life, and it is only when it gets wings, that its presence is usually noticed. The only remedy that has been suggested for this Leaf-hopper in its winged state, is to carry lighted torches among the vines at night. Mildew appears in the hot dry days. Pale spots are seen on the leaves, and if the underside of these be examined, there will be found the gray patches of the minute fungus, which causes the trouble. Sulphur is the remedy. This, upon the first appearance of the Mildew, should be freely and thoroughly dusted upon the foliage of the vines. Bellows for the purpose are sold at the seed and implement stores. The bellows are like an old-fashioned kitchen bellows, and have a wide tube about an inch across. The valve hole is stopped by a cork, and a quantity of Flowers of Sulphur being placed in the body of the bellows, through this opening, it is blown, when the bellows is worked, like a fine cloud of dust, which settles on the foliage, and soon puts an end to the Mildew. The dusting should be done on a hot still day, and two, or at most three applications, will save the foliage, which otherwise would soon become useless.

The Strawberry Bed.

Those who wish to have an increased supply of Strawberries next year, should provide for it at once. Last month we gave sufficient directions for pot-layering the plants; this can continue this month, and if the plants can be set next month, a good crop may be had next year. This method of multiplying the strawberry looks more formidable in description, than it is in reality; the labor is not much, while the returns are most satisfactory.

Keep the Poor Fruit at Home.

In our frequent walks among the dealers, we often wish that we could have the company of those who send fruit to market. Here are several barrels of apples, waiting for the cart to take them to the dump—Why? Merely because the sender sent too much. His "Early Harvest," "Primate," or "Alexander," trees bore well; he shook off the fruit, gathered it up, good and bad, bruised and sound, into barrels, and sent it to market. It had no sale; decay set in, and the commission man can only get rid of it at the dump, and has a bill against the sender for expenses. Had one-third of this fruit been kept at home and fed to the pigs, or ground to make cider for vinegar, the better two-thirds would have had a ready sale. Many no doubt think that we harp needlessly, every year, upon this matter of assorting fruit. The caution is not needless, and we shall continue to repeat it, until we see a better state of things in the market. A peck of poor fruit will spoil the sale of a barrel. The price is not fixed by the many good specimens, but the few poor ones bring the whole lot down to their level. Every one who sends fruit or other produce to the New York or any other market, should know that it is sold by its appearance.

Marketing Pears.

Pears, whether early or late, should never remain on the tree until they become mellow. Whenever they have made their growth they should be gathered. It is easy to tell the proper condition by observing the ease with which the stem parts from the tree. If on taking hold of a pear and lifting it, the stem readily breaks away from the spur to which it is attached, the fruit has received all the nourishment it can get from the tree, and the sooner it is gathered the better. Pears are sent to market in crates and in half-barrels; especially fine specimens are sent in shallow boxes, only deep enough for a single layer of fruit, and each pear is wrapped in thin white paper. Extra specimens of any of the standard kinds, will bring enough more to pay for this extra care in packing. The early varieties mature quicker after gathering than the later kinds, but all should reach the market in a firm and hard condition. As with all other fruit, it will pay to carefully assort pears. Make three lots, firsts and seconds for market, and the third for keeping at home—for the pigs if need be, there is positively no sale for poor pears in the market.

Blackberries and Raspberries.

When the crop has been gathered, it is best to cut away the old canes. We are aware that some claim that it is better to leave these until fall, with the idea that they will strengthen the root. We find that the best cultivators cut out the canes as soon as the fruit is gathered. The growth of the new canes, that are to bear fruit next year, is to be attended to. If more shoots are thrown up from the roots than are wanted, they should be treated as weeds, and cut up. The hight of the new growth will depend upon the manner of training; three or four feet is sufficient for Raspberries, and five or six feet for Blackberries. When the shoots have reached the desired hight, stop them by breaking off the ends.

Vines Rooting, and not Rooting.

A correspondent asks about the advice we have given in our Hints about Work, to prevent the vines of the Sweet Potato from taking root, while we say that those of the Winter Squashes should not be disturbed, but allowed to make all the roots that they will. The advice is in both cases good in the Northern States. If we were growing Sweet Potatoes in Texas, or wherever the frost did not kill the vines, we should let them take root as they pleased. In the Northern States, the season is only long enough for the potatoes formed at the base of the sets to come to perfection. If the vines are let alone, roots will form at each joint of the plant, and some of these roots will swell and try to form potatoes, but they will rarely become larger than a lead-pencil, or one's little finger, before the frost stops all growth, and the energy expended in forming these little roots is wasted. We therefore advise lifting the vines of the Sweet Potato, to prevent the formation of multitudes of small roots, that can come to nothing, and by so doing direct the energies of the plant to perfecting the roots at the base. With the Winter Squashes, it is different. These form roots at the joint, but these contribute to the growth of the fruit; they do not attempt to become anything but roots, and the more of these a vine has, the larger will be its fruit, the squashes. As these roots serve a very different purpose from those of the Sweet Potato, we encourage them.

Asparagus in the Market.

A correspondent in Arizona, sent us several inquiries concerning Asparagus, which we found that the dealers could not answer off-hand. It was some trouble to get at the answers, and as they may interest others, we give them here. Of course, the questions will be inferred from the replies. The bunches of Asparagus are nine inches long, and between four and five inches in diameter; they are made up neatly, and of uniform size, by use of a "buncher," of which there are several kinds in use. The small ends of the shoots are all on the same level, and the lower end is cut square. There are two ties, usually of bass-matting, one near the bottom, and another near the top. The average weight of the bunch is two and a half pounds. The price of the earliest, which comes from a few growers in Georgia, and other Southern States, is from 75 cts. to $1.00 per bunch. When the regular crop from Long Island and New Jersey comes to the New York market, its price ranges from $1.75 to $2.50 the dozen bunches. Asparagus is an article of which there is seldom "a glut" in the market. It may be kept for several days, hence it is not necessary to get rid of it at any price for fear of loss. The supply is limited, as it is not grown by tenants, and those who occupy land transiently, as it must be grown for three years before any return is received, and a plantation, when once established, remains productive for many years. To be a grower of asparagus, one must have sufficient capital to allow him to wait for at least three years before the crop can be marketed, hence it is not likely that the supply will ever exceed the demand. The greater part of the asparagus brought to the New York market, has green tops. A few fancy that which is white throughout, and to meet this demand, some growers blanch the shoots. This is done by coating the bed heavily with salt hay, to exclude the light from the shoots as they push above the soil. In localities at a distance from the coast, straw may be used instead of salt hay. Asparagus to be kept, should be placed in the dark, and if in danger of wilting, the butt-ends may stand in water.

Fig. 1.—FRONT ELEVATION.

Country House, Costing $2,700 to $3,200.

Built as here Described, by day's work, $3,100.

CLASS III.—2nd PRIZE.—BY EDW. PRATT, HANOVER, MICH.

The full engravings showing two elevations and the minutiæ of the floor plans, together with the detailed specifications, leave little to be added. There would seem to be an unnecessary amount of floor room devoted to halls, especially in the Second Story. By changing the position of the beds in the two front chambers, and placing their entrance doors at the interior corners, a bedroom or sewing room, 7 by 10 feet, could be made of the front end of the hall. Half glass doors would be needed to admit light to the hall. Over one-third of the rear division is also in the hall.—The cost of the house will vary from $2,750 to $3,200 or more, according to the locality, price of timber and lumber, cost of labor, etc.—The following is the substance of Mr. Pratt's specifications, which may be used as the basis of a contract. The table gives in detail the materials. Where the stone specified is not available, brick will need to be substituted.

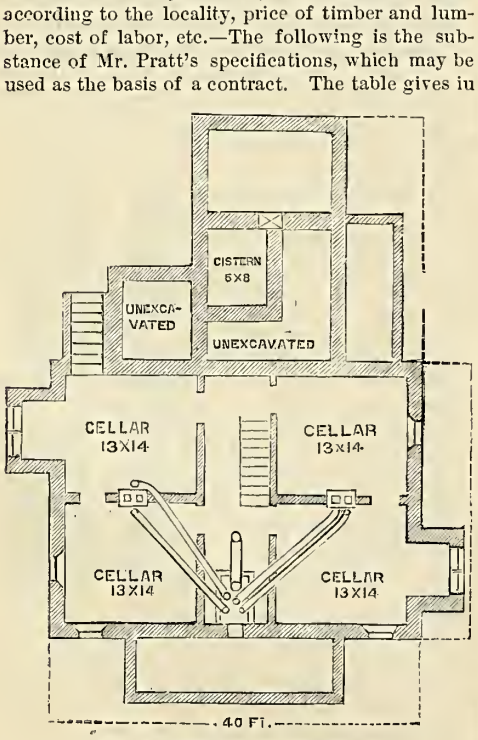


Fig. 3.—CELLAR OR BASEMENT.

Carpenter Work.—FRAME: Main building to be full frame, well braced and pinned, and secured by bolts where necessary. For sizes, etc., see bill below. Studding and floor joists, 16 inches from centers. Rafters 24 inches from centers. Joists well bridged. Purline frame in roof. All to be done in the best manner. Rear extension, "balloon frame." Hight of 1st story, main building, 10½ ft. between timbers; 2d story, 9½ feet; rear building,

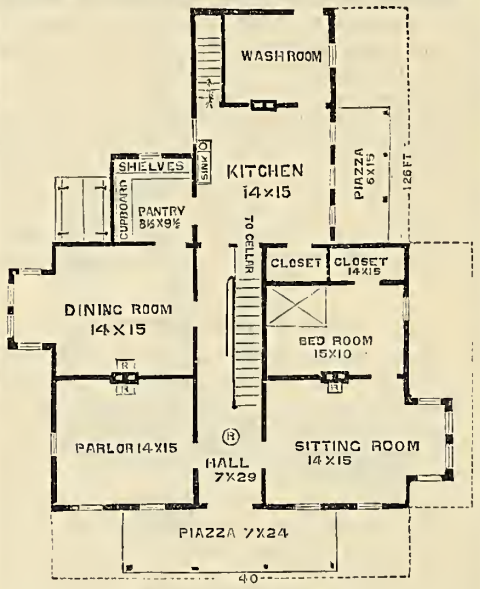


Fig. 4.—FIRST STORY.

1st story, 9 feet; 2nd, 8½ feet....BOARDING—Frame lined on the inside with mill-worked boards, covered with tarred felt paper, and furred off with lath placed 16 inches from centers. Outside covered with good quality 4-inch clapboards. Cornices, piazzas, and all outside work to conform with the elevations, and to be fully completed. Roof boarded and covered with best 18-inch shingles, laid 5 inches to weather. Provide suitable gutters, leaders, etc. ....FLOORS.—Piazza floors of narrow pine; kitchen and pantry, ash; other floors good common 6-inch flooring....WINDOWS.—For sizes see bill. All the principal windows to be hung with weights and pulleys; cellar windows with butts; all to have suitable fastenings....BLINDS to be well hung and trimmed. Inside blinds on bay windows....DOORS—For sizes see bill. All to be well fitted and hung; provide all necessary locks and bolts, with bronze trimmings on front and hall doors; other doors white porcelain. Outside and inside cellar doors to be suitably hung and trimmed....CASINGS to be 6 inches wide in the principal rooms; 5-inch in rear rooms and chambers, with moulded edge, and suitable band mould base, and base mould plinth blocks. Do all that may be necessary to make a good and suitable finish. Kitchen to be wainscoted 3 feet high....STAIRWAY—To be located as shown, of easy rise and tread, well finished, with walnut Newel, balusters and rail. Stairs in rear and to cellar and attic as shown....PANTRY—To be finished with shelving, cupboards, flour and meal chests, drawers, etc. One cellar to be finished for a milk-room. Put bell-pull at front door; bell in kitchen.

Bath-room.—To be provided with bath-tub and wash-basin with waste pipes. A cast-iron sink and pump to be placed in the kitchen, with cupboard under, and have large waste pipe and drain.

Mason Work.—CELLAR—To be excavated as shown on the plan and trenches dug below frost. Cistern dug and dirt levelled. Walls and foundations to be of cobble stone of large size, properly faced, and laid in lime and sand mortar. The stone in foundations above the grade to be blocked, laid in courses and tuck pointed. All joints in the cellar to be pointed....CISTERN as shown on plan, 7 feet deep, thoroughly plastered with water-lime, and lathed and plastered on the bottom of the floor timbers overhead with water-lime mortar. Opening for entrance and ventilation as shown. Good inlet and overflow pipes and drain to be provided....CHIMNEYS, as shown, well laid and plastered smooth inside, and provided with all necessary openings....PLASTERING—First and second stories to be lathed and plastered two coats of brown mortar and hard finished. Plain Cornice in Parlor and Sitting-room; suitable Center Pieces. Marble Mantels with brackets on chimneys in Parlor, Sitting-room, Dining-room, and Bed-room.

Furnace.—To be placed as shown on plan, with heater pipes and registers. Large heater pipe and register in hallway to warm upper rooms.

Painting.—Paint entire building three coats best paints; colors to suit. Grain Parlor, Hall, Sitting-room Kitchen, Bed-room and Pantry.

Estimate of Materials, Work, Etc.

2 Sills, 6x8 in., 40 ft. long.	4 Purline Beams, 6x8 in. x16 ft.
4 Sills, 6x8 in., 30 ft. long.	The 40 feet Sills and Plates,
2 Sills, 6x8 in., 26 ft. long.	if not obtainable, may be
2 Sills, 6x8 in., 16 ft. long.	made by splicing 20 feet by
3 Sills, 6x8 in., 20 ft. long.	22 feet pieces together.
1 Sill, 6x8 in., 24 ft. long.	200 Joist, 2x8 in., 16 ft. long.
1 Sill, 6x6 in., 22 ft. long.	40 Joist, 2x6 in., 24 ft. long.
1 Sill, 6x6 in., 16 ft. long.	40 Joist, 2x6 in., 16 ft. long.
1 Sill, 6x6 in., 12 ft. long.	80 Joist, 2x4 in., 22 ft. long.
8 Posts, 4x8 in., 22 ft. long.	200 Joist, 2x4 in., 20 ft. long.
8 Beams, 6x8 in., 30 ft. long.	150 Joist, 2x4 in., 18 ft. long.
2 Plates, 6x8 in., 40 ft. long.	100 Joist, 2x4 in., 16 ft. long.
2 Purline Plates, 6x6 in. x40 ft.	100 Joist, 2x4 in., 12 ft. long.
8 Purline Posts, 6x6 in. x9 ft.	25 Joist, 4x4 in., 20 ft. long.

Total of the above 17,996 feet, at $14.00 per 1,000 feet..$ 251.93

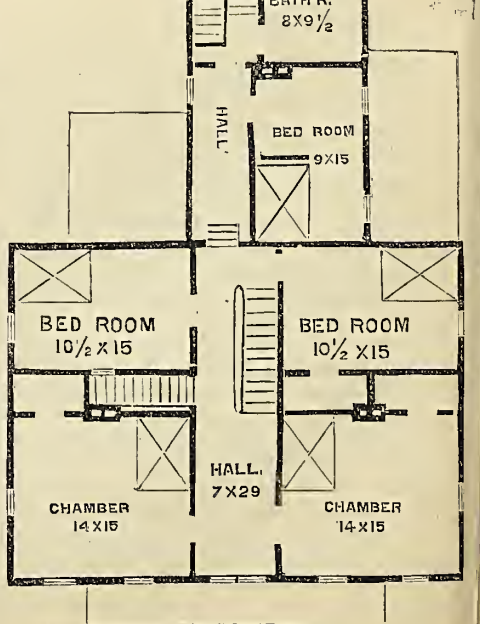


Fig. 5.—SECOND STORY.

8,000 ft. Mill-dressed Roofing and Sheathing, at $12..	96.00
5,000 feet 4-inch Siding, at $18.00 per thousand feet..	90.00
23,000 Shingles, 18-inch, at $3.50 per thousand.....	80.50

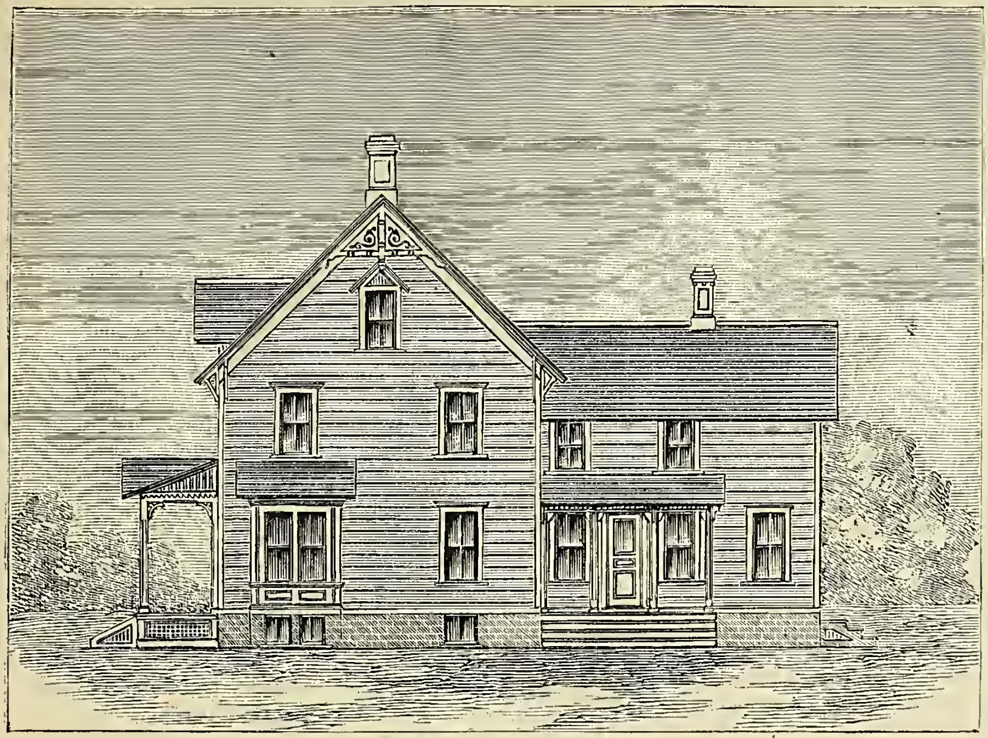


Fig. 2.—SIDE ELEVATION.

Brought over		$ 518.43
4,000 feet 1-inch Finishing Stuff, at $30.00		120.00
1,000 feet 1¼-inch Finishing Stuff, at $35.00		35.00
800 feet 2-inch Finishing Stuff, at $30.00		24.00
700 feet ¾ by 4-inch Ceiling, at $25.00		17.50
350 feet 1¼ by 4-inch Flooring for Piazza, at $25.00		8.75
250 ft. 1¼ by 4-in. Ash Flooring for Kitchen, at $30		7.50
4,000 feet 6-inch Common Flooring, at $18.00		72.00
300 feet ½-inch Finishing Stuff, at $35.00		10.50
3,000 feet Mouldings, 2½ cts. average per foot		75.00
1 Pair Front Doors, 4 ft. 6 in. by 8 ft., upper panels glass, 2-inch		16.00
1 Door, 2 ft. 8 in. by 7 ft., 2-inch.	Average $2.25 each.	
7 Doors, 2 ft. 8 in. by 7 ft., 1½-inch.		
4 Doors, 2 ft. 6 in. by 7 ft., 1½-inch.		
6 Doors, 2 ft. 8 in. by 6 ft. 8 in., 1½-inch.		
6 Doors, 2 ft. 6 in. by 6 ft. 8 in., 1½-inch.		54.00
14 Windows, 4 Lights, 14 by 36 glass, 1½-in.	Average $2.75 each.	
12 Windows, 4 Lights, 14 by 32 glass, 1½-in.		
2 Windows, 4 Lights, 12 by 32 glass, 1½-in.		
7 Windows, 4 Lights, 14 by 28 glass, 1½-in.		96.25
8 Cellar Windows, 2 Lights, 14 by 20 glass, $1.50 each.		12.00
8 Sets inside and 27 Pairs outside Blinds, av. $1.75.		61.25
275 Days Carpenter Work, at $2.00 per day		550.00
175 Yards Excavating, at 15 cts		26.25
130 Perches, 16½ ft. to perch of stone, laid at $1.50.		195.00
12,000 Bricks, laid at $12.00 per 1,000		144.00
1,400 Yards Plastering, 2 coats brown, 1 white, at 20c.		280.00
Stone Steps, etc., $10.00; Center Pieces, etc., $25.00		35.00
4 Marble Shelves with Brackets		30.00
Painting and Material		250.00
Wood-burning Furnace with Pipes, etc		150.00
Bath-room Fixtures and Plumbing		75.00
Nails, $40.00; Gutters, etc., Tin Work, $35.00		75.00
Doors, Windows and Blinds, with Trimmings, etc		125.00
200 lbs. Tarred Paper, at 7 cts		14.00
Extras and Incidentals		22.57
Total Cost		$3,100.00

Bee Notes for August.

In many parts of the country there is a great dearth of nectar-bearing flowers this month—only enough to keep the hees at hreeding. If the hecs secure no honey, they should he fed sparingly, a very little each day, so that the queen may not stop laying. In this way the brood rearing can he kept up, and there will he ahundant bees to secure a rich store of autumn honey, and insure safe wiutering. If the queen once stops laying, it is often very difficult to start her again. Some bee-keepers say that feeding does no good, as upon trial the queen still refused to lày. In all such cases the feeding was commenced too late. We have tried experiments in this direction for many years, feeding part of our colonies, and omitting to feed others, and have always found the importance of feeding ahundantly demonstrated.

Robbing.

Whenever the hees are not gathering honey, their industrious instincts lead them to become freehooters, aud, rohhing once commenced, woe to the weak colonies of the apiary. Nuclei are also very likely to fall a prey to these pillagers. Nothing more quickly induces rohhing than the spilling or leaving of any honey or syrup ahout the apiary. Let the hees once get a taste, and they become ravenous, aud are at once on the rampage to appropriate the property of others. Such a spirit of plunder may also he engendered by too frequently opening the hives during these times of enforced idleness. The colony robhed should have the entrance nearly closed, so that only one hee can pass out at a time. Then almost any colony will defend itself, unless it has hecome entirely dispirited, when it must he closed up entirely, or carried into a cool room for a time. If closed, give sufficient ventilation, that the hees may not smother.

Strong colonics are those that hring profit, and such will defend themselves against rohhers at all times. The Italian bees are far less liahle to suffer from rohhers than are the hlacks, while the Syrians are rarely thus trouhled. Rohhers that attack a Syrian colony find they have "caught a Tartar."

NOTES.—The Syrian hees are more than sustaining their reputation. They have all of the points of superiority possessed hy the Italians, magnified, except that of amiahility, and as they are handled, they are hecoming very manageahle. This year our queenless colonies are very peaceahle, while last year they were exceedingly irritahle. Their late and early hreeding are points in their favor. For prolificness, they are marvels. They are superior in the points where Italians fail; they are slow to leave the hives on very windy days, a trait which natural selection would develop in the windy regions of Syria, and they are ready to go into the sections to store their honey.

The National Bee-Keepers' Association will meet in the Washington Park Hall, opposite the Exposition Building, in Cincinnati, Ohio, Octoher 3d to 5th. Everything indicates that this meeting will be one of the best ever held in the world. Every hee-keeper should arrange to attend, if possihle.

Our Waning Forests.

In all the numerous articles that have fallen under our notice ahout the destruction of our forests, we have never seen any douhts expressed about the facts in the case, or anything hopeful upon the other side of the question. The impression left upon the mind of the reader is, that every acre of woodland cut off is never renewed without artificial means, and that the country is doomed to harrenness in a few generations at the longest, hy reason of the disappearance of our forests. It takes so many millions of acres for fuel, still more for lumher, millions for railroad ties, agricultural tools and machines, lasts, shoe pegs, matches, boxes for packing, etc., every year, and at this rate, the country is soon to he denuded of its forests, the streams dried up, and our agriculture and manufactures depending upon water-power are coming to ruin in a very short time. This is the picture as it is presented to us by the city editor, as he looks at things from his sanctum. It is ahout time this nonsense was exploded, and the facts in the case stated as they appear to us wood-choppers and clod-hoppers in the country. It is undoubtedly true that there has heen a great decrease of forests in the old seahoard States, since the first settlement of the country, for that has heen a necessity, without which there could he no agriculture, and not much increase of population. It took at least a hundred years in these States to remove so much of the forest as was an obstruction to agriculture. Not more than one-fifth of the area of a country need he left in wood, to secure its highest productiveness in farm crops. This point has not yet heen reached in some parts of the seahoard States, yet in other parts it has heen somewhat passed, and there is a deficiency of wood for fuel and timher. The alarmists overlook the most important fact that very much of the timher land that is cleared in the older States is very soon renewed hy natural agencies. There is a regular system of growth and clearing, and timher and fuel are as much reliahle money crops as corn and potatoes. On fair, average soil, a forest will renew itself once in twenty-five years. It would probahly pay better to stand thirty or forty years, hut it is available, and can he turned into ready money every twenty-fifth year. A farmer with twenty-five acres of forest can clear an acre every year, with no diminution of woodland. In the rural districts of Connecticut, with which we have heen familiar for the last fifty years, there has heen no waning of forests. Ship-timher, near seaports, has grown scarce and high, but the price of wood for fuel is no higher, and in some markets is even cheaper than it was fifty years ago. The Census shows that, in the exclusively agricultural towns, there has been no increase of population, and in some of them a decrease during the last 40 or 50 years, so that there is no more demand for fuel and timher to-day than there was in the days of our grandfathers. Wood for fuel, except in the shape of kindlings and charcoal, has gone out of use in our cities and villages on the seahoard and along the line of our railroads. Farmers, not a few, within four or five miles of these villages, are beginning to use coal, and the hase-hurner, once in the parlor or sitting room, soon drives out the wood fires and stoves from the rest of the house. Coal is found to he far cheaper, and a cleaner and more convenient fuel than wood, even for those who own wood lots. Kerosene is also hecoming available for heating, and we see no prospect in the future that wood for fuel will ever be any more in demand than it is to-day. It is douhtful if it ever will he dearer for lumher. Iron is taking its place in ships, hridges, machines, houses, and puhlic huildings, and the demand for iron, stone, hrick, as the most desirahle materials for huilding is likely to increase as the country increases in wealth. In some of these rural districts there is more danger of a relapse into wilderness and harharism, than of exterminating our forests for the advance of high farming and civilization. In 75 of our farming towns there was a decrease of 12,000 in population during the last decade, which means an increase of woodland. In a ride of an hour, yesterday, in one of the towns hordering on the Connecticut River, we passed six old chimney stacks and cellars, the sites of deserted homes, the road for much of the way hordered hy forests. Even in the Nutmeg State, where we use some superfluous wood, it is difficult to feel the alarm ahout waning forests. CONNECTICUT.

Keeping Off Insects.—"T. B.," Wilkesbarre, Pa., says that he has for years used and still uses the following for keeping insects from his Beans, Squashes, Tomatoes, and other plants: When the seeds are put in the ground, or the plants are transplanted, he puts a few lettuce seeds in the hill, or puts some lettuce plants there. He says that this will keep off the hugs, "and no mis-

take." Probably this gives the insects tender and acceptable food; they eat the lettuce, and let the other plants alone.

SUNDRY HUMBUGS

A teacher of a Select School in Pennsylvania sends us a copy of a circular with which, as he says, he is "occasionally pestered." The circular is of a Boston concern which apparently offers great inducements to engage in the sale of its so-called "Silverware." These are shrewd fellows, for they "put on airs," and caution the public against other concerns in the same trade. Boston seems to be the headquarters for a lot of dealers who should be let alone. If one buys silverware at a price below the real value of such articles, he deceives himself. Many prefer to purchase plated ware, as the loss in case of robbery is less, and if good at the start, it will last in use for many years. Genuine plated ware is to be had, but

The only Guarantee

for the quality is the reputation and *honesty* of the maker. To the inexperienced tbinly plated ware *looks* as well as that of better quality. Our advice is, to buy such articles only of regular dealers whose word may be taken as to quality, and to let alone all those "Companies" who profess to offer wonderful bargains in plated ware.

Variety Circulars.

These pernicious sheets are sent far and wide. The chaps who issue them get hold of the school and college catalogues and mail them to the students. Parents should be on their guard, and know what kind of priuted matter their sons and daughters receive by mail. It is within our own experience that matter of the vilest kind is sent to mere children, and even directed to the care of their parents. We have before us one of these sheets, issued in a small town in Massachusetts. It offers various books, of a kind that, judging from their titles, young people ought not to have. Among other works are: "The Real Secret Art and Philosophy of Wooing, Winning and Wedding." There is a long list of contents, which promises the knowledge of many "mysterious things." Then there is "Old Aunt Dinah's Fortune Seeker's Sure Guide to Lucky Dreams and Lucky Numbers"—which is merely a guide to "policy" gambling. Other works, apparently innocent in character, are offered, hut the general tenor of all is decidedly bad.

"The ** Corresponding Club"**

still sends out its pernicious circulars, proposing to bring people into correspondence "With a view to Mutual Improvement, Amusement, or Matrimony." This thing should be stopped. No doubt the postmaster at the small place whence these circulars are issued knows of their contents, and we advise him to promptly stop sending them to save trouble.

"The American Marriage Alliance"

still continues its circulars. We confess that we have little patience with those who inquire ahout the responsibility of these "Marriage Insurance Companies." If there is anything in this world too sacred to he a suhject for gamhling, it is marriage. We do not care whether these concerns will do what they propose or not. Any one who will take stock in them, does not deserve a good wife. We can not say if the Ohio concern is more reliable than the Pennsylvania shop. Our advice is, to let them all alone.

Accusing the Wrong Man.

We have in illustration of this a letter headed in large letters, "Fraud," which accuses one of the best known nursery firms in the couutry of sending through their agent, whose name and address is given, many hundreds of fruit trees which were hought for choice varieties, hut which will prove to be a fraud. The writer claims that the nurserymen referred to have sent out a lot of "culls" and refuse stuff, and asks us to come and investigate the matter. There are some persons, even in the nursery business, who have a reputation ahove suspicion; and as the trees in question have passed through other hands, we advise our complaining correspondent to look to these parties for redress. We are sure that the nursery firm he accuses will give proper attention to any respectful complaint.

Electricity and Magnetism

turn up in a great variety of forms. One can not walk far upon the streets without having thrust into his hands a circular of some "Electric" or "Magnetic" affair. We have a circular of a "Maguetic Shoe," which is not only to prevent "Hot or Cold Feet," but is to prevent Corns, Bunions, and all sorts of feet ailmeuts. But what are these partial affairs to those garments, of which there are several, with formidable looking eyelets, which propose to envelop the whole body with a "Magnetic," or "Elcctric," or "Galvanic," or some other ——"ic" influence? There are some diseases, which, as experienced physicians well know, are hest treated hy amusing the patients. It is probably in thus amusing the patient, that these various gimcracks may seem to have a use.

"Medical Matters"

always make up a goodly share of our Humbug correspondence. Some of these it is impossible for us to answer. For example, a correspondent on L. I., asks if he shall take the agency of a certain "Pad." He assumes that we know all about the thing, and sending no circulars, inquires "whether it is a fraud or not." As we do not know what the "pad" is made of, we can not advise him. If he does not know what it is, he had hetter let it alone. It is a peculiar human weakness, to helieve that something from abroad, in the way of medical treatment, must be better than that which can be had near home. Quacks understand this, and those who live in large cities, advertise extensively in distant papers. As a consequence, we get inquiries about parties who make great claims as physicians, who are not known in New York as practising medicine, and who, when hunted up, are only to be found in some obscure place. We recently had an inquiry of an advertising doctor, who claimed to he

A MEDICAL INSTITUTION,

and as he gave us his address, a place not very far from our office, we made a call at the place. The address of the individual who represented the "Institution," had been changed. At the time of our inquiry, he could have been found on Centre Street, at a public house called "The Tombs," where he was confined on a charge of sending obscene literature through the mails. Our friend who wishes us to "find out if the Institution is all right or not," is advised to consult the nearest physician for his "liver trouble," as he may be sure that those doctors who live in New York, and other large cities, and are trustworthy, do not advertise in distant, or any other papers, nor do they call themselves "Institutions," "Universities," or "Dispensaries."

Journals at a Distance

are becoming cautious in the matter of accepting advertisements. Instead of complaining that they have been swindled by this or that advertiser, they now ask, before publishing the advertisements, if the parties are reliahle. An inquiry from publishers in Canada, concerning some patent medicine chap, was recently investigated. Our associate reports that he found the number indicated, hut that the only "medicine" dispensed was Lager Beer. Many of those who advertise so loudly at a distance, can only he found at such obscure places, and we are glad to know that our friends who publish journals at a distance, are exercising care.

David's Prize Soap—[Lottery?]

When the eminent chemist, Liebig, asserted that the degree of civilization reached hy a nation could he measured hy the amount of soap it annually consumed, he had not heard of this remarkable soap of David. Ordinary common soap indicates that a nation is given to cleanliness, but David's soap carries with it no end of luxuries. A show-bill of this soap is a wonderful work in black and red ink, and second only in its absolutely "stunning" character, to the announcement of a circus or a horse-race. This show-bill offers to buyers of the soap, a remarkable list of prizes, to he given away—not at a "drawing"—oh no! but at a "presentation." Among the prizes are a "Brick House and Lot," United States Bonds, Horses and Carts, Gold Coin, Pianos, Diamond Jewelry, Watches, Tea Sets, and numerous other things, down to Velocipedes and Refrigerators. This is not a regular lottery, but the wrappers call for tickets, which are not sold, but are given away as a "reward for using David's soap." David makes a handsome show-bill, and displays much ingenuity in trying to get around the law against lotteries. David's tickets have been seized, and the proprietors of the lottery have been arraigned before the courts, but a decision in his case, has not, at our going to press, been rendered. All former decisions show that this soap-prize distribution, comes under the law against lotteries. The fact that the gambling is concealed under the name of a "presentation," has not been of any avail in other cases of a similar kind. Indeed, the courts have regarded as an aggravation of the offence, this attempt to associate a lottery with an article in common use in every household, as it familiarizes domestics, children and others, with a most pernicious form of gambling. The suit against the soap-lottery will be pushed, and when we learn of the decision, will make it known. In the mean time, it is interesting to know that all former decisions have been most emphatically against this form of gambling.

An Organ[ic] Trouble

turns up every now and then. Certain country journals, attracted by what seems to be a liberal offer, advertise the Piano and Organs of "the Mendelssohn Piano Co," to the amount of $35, which will entitle the publisher to a "Home Jubilee Organ," of that price—if he can get it—or the amount ($35,) can apply to a higher-priced instrument, the balance to be paid in cash. This proposition to give

AN ORGAN IN EXCHANGE FOR ADVERTISING.

seems to be a one-sided affair. The parties get advertising, but the advertisers get no organs. There does not seem to be any $35 organs; the company claim to have so many cash orders for other and more costly instruments, that they do not get any chance at these cheap organs; but they are always ready to accept a "balance in cash," and send any other style of organ at a higher price. We exposed this trick some months ago.—If the puhlishers of country papers had taken the warning we then gave, they would not now be asking us to help them get the promised organ.

Inheriting Foreign Money.

There are many thousands of people in this country ready to indulge in hopes of falling heir to the property of some deceased distant relative in Old England. Scores of thousands of dollars are every year spent in investigating these illusive claims, and certain parties accumulate wealth by fostering such notions and pretending to have special facilities for investigating them. We have yet to hear of the first success in actually securing the hoped-for money from such sources.

"Next of Kin" Swindle Successful in England.

There have just come to light extensive frauds in the vicinity of Birmingham, England, by means of which multitudes of persons have been swindled out of small and large sums, amounting to a great many thousands of dollars in the aggregate. A company styling themselves "The International Law Agency," avowedly established to discover the heirs and next of kin for receiving $27,750,000 at present in Chancery awaiting claimants. A suite of offices was rented in Birmingham, and branches announced in London, Manchester, Glasgow, etc., with important "agencies" at *New York*, and Melbourne, Australia. Advertisements were sent out inviting all parties bearing the common names of Smith, Johnson, White, King, Wood, Roberts, Wright, Scott, Ward, Mason, Green, Griffith, Davis, etc., to send their address, lincage, etc., with a small remittance to cover preliminary expenses—perhaps only a postage stamp or two. From the great number of answering people, a host of victims were

selected, and they were led on by correspondence, by claims to have found them in the line of certain success in securing sums of $10,000 to $100,000. Of course frequent ealls were made for funds to prosecute the claims. People hunted up their baptismal and marriage certificates and family records, and often sold their most necessary articles of clothes and their furniture, to raise the sums needed by their "International Law" counsel. Of course every one maintained great secrecy, so as not to bring in contestants; and thus the swindling went on, until finally discovered by the officers of the law, who took possession of the premises, and found a vast mass of correspondence, etc., to show that the scheme had grown to immense proportions.

The "Pillow Inhaler,"

alluded to in our July issue, it is claimed, possesses healing virtues. The proprietor writes us from Philadelphia: "Such men as Dr. D. Hayes Agnew have commended the idea of the Pillow Inhaler, and we are putting them out on doctors' orders right along. There is not an atom of humbug about the Pillow."

The Ozone Bulletin

continues to be sent out; it still claims to be "Published Monthly," but does not tell us in what particular month. It issues an extra, or supplement, in which it states that, having seen "unjust criticisms on Ozone," they publish a lot of certificates, and offer to forfeit "One Thousand Dollars for each and every one of which we can not show you the original autograph letter." We suppose that our criticisms are regarded as "unjust," but why don't they publish them? Our objection to this fraud is, that it is obtaining money under false pretenses. It is selling as "Ozone," at a high price, common Brimstone, or

FLOWERS OF SULPHUR.

Whether it will preserve this or that, as the certificates claim, has nothing to do with the question. That Sulphurous Acid (Sulpurous Anhydride, $S O_2$) will preserve various animal and vegetable substances, we are well aware, and have never denied. The miserable fraud consists in selling under the name of "Ozone," for $2, the same stuff that, under its proper name, Sulphur, can be bought for 10 cents or less.

THE VAPOR OF BURNING SULPHUR

may be used to preserve various articles, and has been so used for many years. Our own examination, and that of our friend, Dr. Robert Warder, of Ohio, show unmistakably that this so-called "Ozone" is only common Flowers of Sulphur, colored. It is *not* Ozone, it is *nothing like* Ozone, and the selling of it as Ozone is one of the most barefaced frauds of the day. Every one who has bought a parcel of the stuff has good cause for a suit against this "Ozone Preserving Company." The law is strict in New York State, and we would suggest to this company to read up the statutes relating to obtaining money under false pretenses.

Rennie's Pain-Killing Magical Oil.

Sometimes the stories of the discovery of remarkable remedies are full of interest. We have not of late met with any quite so thrilling as that under the above name. There are seven large pages of oriental adventure: Kristodas, the oriental snake charmer; a journey down the Hodgly; the mangoose; lions—real man-eaters, and all sorts of thrilling eastern things contribute to the discovery of this "Magic Oil." Seven pages of story to one page of certificates of its cures, show that this oil has a green-hand at the helm. Being a "Magical Oil," of course there is no end to its possibilities.

A Lost Sister Found.

On opening the mail one morning recently, we found the following communication: "Editor *Agriculturist*.—Dear Sir.—I am a farmer and subscriber to your paper. I am too poor and too sick to undertake a journey to New York on this most urgent matter, to which I imploringly call your attention. My sister, Mrs. ———, is now detained at No. — Mulberry Street, N. Y. She has several children with her. She was decoyed from her home at ———, Miss., by a good-looking man, by the name of ———. She had started to join me at this place. ——— had her baggage marked to himself in New York, got some of her money, and keeps it."—We at once sent to the house designated, and found the missing sister in company with another sister. The latter had been abandoned by a brute of a husband, who had brought them both from Miss. to New York, and then decamped, leaving them in a state of starvation. The women are very ladylike in their demeanor, and have conducted themselves with the utmost decorum at the house where found. We hope by the time this paper reaches its readers, they will have reached their brother's Nebraska home, having the wherewith supplied them for making the journey.

Preventable Losses on the Farm.

BY WALDO F. BROWN.

It is a "penny wise, and pound foolish," system, to breed from scrub stock. There is not a farmer in this region who has not access to a pedigreed Shorthorn bull, by a payment of a small fee of two to five dollars, and yet we find only one animal in ten with Shorthorn blood. It is a common practice to breed to a yearling, and as he is almost sure to become breechy, to sell him for what he will bring the second summer. Many farmers neglect castrating their calves until they are a year old. I think ten per cent are thus permanently injured, must be classed as stags, and sold at a reduced price. Fully half the calves so stunted never recover.

With many, the starving process continues through the entire year. They are first fed an insufficient quantity of skim milk; then in July or August, just at the season when flies are at their worst, and pastures driest, they are weaned, and turned out to shift for themselves, and left on the pastures until snows fall, long after the fields yield them a good support. They are wintered without grain, spring finds them poor and hide-bound, and the best grazing season is over before they are fairly thrifty.

The keeping of old cows long past their prime is another thing which largely reduces the profits of the farmer. We have found quite a large per cent of cows, whose wrinkled horns and generally run down condition, show that they have long since passed the point of profit. A few years ago, these cows would have sold at full prices for beef, now they will sell only for Bologna at 2 cts. per pound. Thus cows have, in a majority of cases, been kept, not because they were favorites, or even because they were profitable, but from sheer carelessness and want of forethought. Another fruitful cause of loss to the farmer, is attempting to winter more stock than he has feed for. Instead of estimating his resources in the fall, and knowing that he has enough feed even for a hard winter, he gives the matter no thought, and March finds him with the choice of two evils, either to sell stock, or buy feed. If he chooses the former, he will often sell for much less than the animals would have brought four months earlier, and if the latter, will usually pay a much higher price for feed than if it had been bought in autumn. Too often he scrimps the feed, hoping for an early spring, and so soon as he can see the grass showing a shade of green around the fence rows, or in some sheltered ravine, turns his stock out to make their own living. This brings one of the most potent causes of unprofitable cattle raising; namely, short pastures. The farmer who is over-stocked in winter, is almost sure to turn his cattle on his pastures too early in the spring, and this generally results in short pasture all summer, and consequently the stock do not thrive as they ought, and in addition, the land which should be greatly benefited and enriched, is injured, for the development of the roots in the soil, must correspond to that of the tops, and if the latter are constantly cropped short, the roots must be small. The benefit of shade is lost, and the land is trampled by the cattle in their wanderings to fill themselves, so that it is in a worse condition than if a crop of grain had been grown on it. From all these causes combined, there is a large aggregate of loss, and it is the exception to find a farm on which one or more of them does not exist, and yet without exception, they may be classed as "preventable," if thought, and practical common sense are brought to bear in the management.

A Paper To Keep Ten Years.

At least a hundred hours of severe mental work have been expended upon four pages of this August number of the *American Agriculturist*, (pp. 328, 329, 330, and 346). They will be found not only interesting, but very valuable for frequent reference, as no equally comprehensive and accurate summary can be had again before 1892. The facts set forth have been gathered, collated, and condensed, partly by the aid of advanced sheets from the Census Bureau, partly from correspondence, and partly from numerous speeches in Congress on tariff, taxation, etc., etc., by Senators and Representatives, who have direct access to, and assistance from the Census records, not yet made fully known otherwise.

With these four pages before one, he can, at a moment's glance, know where to find the greatest amount of any farm product, of animals, etc., and what is the leading agricultural industry of any State or section of the country. It will be worth while to obtain an extra copy or two of this number, cut out these pages, and paste them in a reference book. The figures, etc., without the grouping, unless our plan is adopted, will be found scattered through the Census Reports when fully published, but they will be too bulky for convenient reference, or for universal or even general distribution.

On page 328 will be found not only the total number of Farms in the United States, but in each individual State and Territory, and also the number of each of eight different classes as to size, and also how they are cultivated—by owners, by renters, or on shares. Then follows a dozen groups, showing the relative standing of the States, in each class of farms, the farms per acre, the number of families, of dwellings, etc.; also the product of milk, butter and cheese in the leading dairy States.

On page 329 is a complete exhibit of all Farm Animals (quadrupeds) in the whole country, and in each of the 47 States and Territories, with a grouping of the States in respect to the number of each kind of animals. Most people will be surprised at some of the results. For example, we recently asked a dozen or more intelligent men: "Which State has the most Swine?" and every one promptly replied, "Ohio, of course," forgetting, or not knowing, that Chicago, instead of Cincinnati, is the present "Porkopolis," and her largest supplies come from Iowa, as any one would readily believe on going west from Chicago, and seeing the miles of freight trains bound castward, loaded with the black-haired porkers. Iowa has nearly a million more Hogs than any other State, and in this nearly doubles Ohio, which ranks fourth in Swine production, though at the head of all in the total number of all farm animals, having over ten and a half millions of them.—Few would assign to New York 66 per cent, or 571,942 more Milch Cows than any other State; or put Pennsylvania in the fourth rank; or would write down Ohio as the greatest Sheep growing State, and California as next; or suppose that five States and one Territory have more Sheep than all the other forty-one. Other like surprises will be found in our record.

On page 330 are grouped the leading Grain-growing States, the acreage of the principal crops, the total product, and the yield per acre in all and in each, with such striking facts as, that six States alone supply half of all our Wheat; or that three States grow within four per cent of all the Indian Corn raised; or that all New England grows less than one-fifth as much Rye as the single State of Pennsylvania; or that New York yields three eighths, or 38 per cent, of all Buckwheat grown, and that New York and Pennsylvania produce seven-tenths of this crop.—Numerous other interesting and surprising comparisons will be found, or suggest themselves, in the larger tables.

Finally, the variety of facts we have prepared and condensed upon page 346, will be both entertaining and valuable to all for future reference.

The Large Grapevine Caterpillars.

Whoever works among grapevines, is sure to make the acquaintance of various insects. Some of these are described upon other pages. Early in

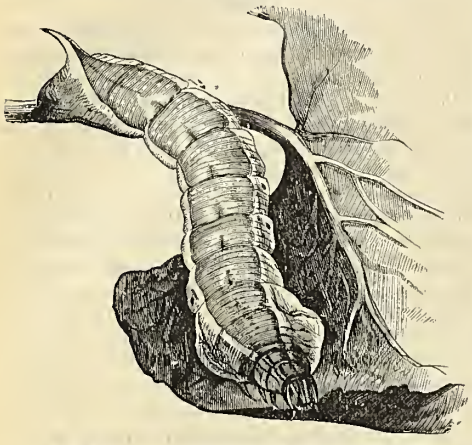


Fig. 1.—HOG-CATERPILLAR OF THE VINE.

the season, one will meet with several small caterpillars, but in August, and later, he will come across creatures so large and so voracious, that he is glad that they are so few. The Sphinx family of moths are very noticeable in the perfect state; on account of the large size of some of them, they are often mistaken for Humming-birds. So beautiful are they in their colors and markings, and so agile are they, as they flit among the flowers, that one does

Fig. 2.—MOTH OF HOG-CATERPILLAR.

not associate the idea of mischief with these attractive insects. But those who have studied insects even but slighty, must know that however attractive one may be in its perfect state, there has been a time when the same creature was without wings, but barely crawled from place to place, and bore a form that by common consent is called a "worm." A number of these large caterpillars feed upon the grape in different parts of the country. They are most voracious feeders, and their greedy habits soon betray them; they void such quantities of excrement, that their presence is readily indicated by their droppings, and, if the vineyard is kept free from weeds, as it should be, these accumulations of pellets of excrement will lead to their detection. These caterpillars are so nearly of the same color as the foliage or as the stem of the vine, that they might often escape notice, were it not for the tell-tale droppings. One who once witnesses the rapidity with which they feed, will be grateful that they do not come in hordes, but are solitary. The most frequent of these large caterpillars, in western vineyards at least, is called by the not very elegant name of "The Hog-Caterpillar of the Vine." The young caterpillar is pale-green, with a long, straight horn at its tail-end. As it increases in size, and undergoes its changes of skin, the horn becomes shorter, and has a curve, as shown in figure 1, which represents the full-grown worm. Its name, Hog-caterpillar, is due to the fact, that while the first and second rings are small and can be drawn in, the third and fourth rings are much enlarged, and the fore-part of the worm has a resemblance to the fat cheeks and shoulders of some of the improved breeds of swine. The general color is pea-green when full-grown, and is marked with pale-yellow dots. It has an oblique cream-colored band along the sides, as shown in the engraving. When full-grown, and about to transform, the color changes to pinkish-brown. It descends to the ground, and there, under any rubbish it may find, forms a cocoon in which it becomes a chrysalis, from which, in time, it comes forth as a fleshy-gray moth, shaded with olive-green, as in fig. 2. In Northern localities, the moth is one-brooded, but in Missouri, and southwards, there are two broods, the last appearing in August and September. Like other large caterpillars, this is attacked by a parasite, which deposits its eggs within its body, and the larvæ hatched from these so far weaken it that it cannot make its changes, and produce a perfect moth. For this, and all other large caterpillars of the grapevine, hand-picking is a sufficient remedy. The entomologists' name for this insect is *Chærocampa pampinatrix*. Passing by the Achemon Sphinx (*Philampelus achemon*,) the Abbot Sphinx (*Thyreus Abbotii*,) the large caterpillars of which feed upon the vine in various parts of the country, we notice the Satellite Sphinx (*Philampelus Satellitia*,) more generally distributed than any other. These grapevine caterpillars, it should be stated, are found upon our wild vines, and most of them feed upon the Virginia Creeper (*Ampelopsis quinquefolia*,) a close relative of the grapevine. Figure 3 gives this caterpillar of the Satellite Sphinx at different ages. When this caterpillar is first noticed, it has a rather conspicuous horn, as shown at the top of the engraving at *c*; at this time it is green, with a tinge of pink along the sides. As the worm grows, its horn becomes shorter, and is finally lost entirely. When it is full-grown, this caterpillar is nearly four inches long, and when moving, appears as at *a*. It is pinkish or flesh-color at first, but ultimately becomes a rich, velvety, vinous brown. It has a habit when disturbed of flinging its head from side to side, in a manner that alarms timid people. When at rest, it draws the first two joints of the body into the third, which gives it the appearance out-lined at *b*. When about to transform, it goes a short distance into the ground, and becomes a chrysalis, in which state it remains until the next year, when it appears as the beautiful olive-gray moth, with dark olive-green markings, shown in fig. 4.

A Scarecrow that never Fails.—Our correspondent "C," writes us: "There has been much complaint on all farms favored with forests, of the depredations of crows in the corn field. Much time has been spent in replanting, and if town meeting was called at this time, any amount of money would be voted as a bounty on crows. Higgins says he is glad of it, for he has a remedy that he has used for twenty years, and never known it to fail. A kernel of corn enveloped in the thinnest covering of gas tar, is as secure against crows, as if it were in the crib. A great many intelligent farmers have used it, and it secures the safety of the springing corn from the attacks of birds. The smell is offensive to them, and they will not scratch where it is. The remedy has been published in our farm

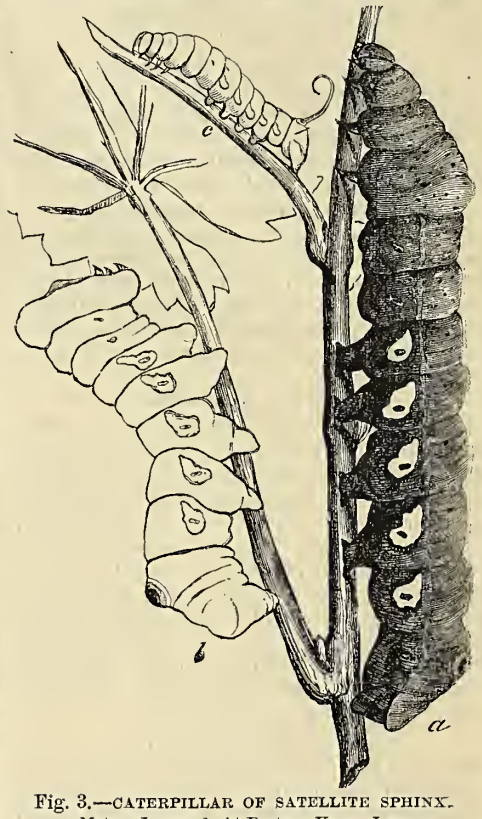


Fig. 3.—CATERPILLAR OF SATELLITE SPHINX.
a, Mature Larva; *b*, At Rest; *c*, Young Larva.

journals, from one end of the land to the other. And yet farmers who see crows every day, and suffer more or less every year from their visits to the corn fields, use the old scarecrow and suffer loss. Ten cents worth of gas tar would save their crop."

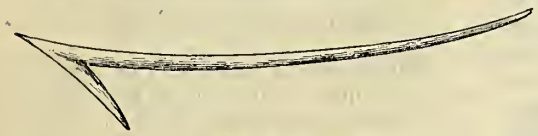
Fig. 4.—SATELLITE SPHINX (*Philampelus satellitia*).

Pine-Tar on Fruit Trees.

A correspondent at Basking Ridge, N. J., asks if it will be safe to apply pine-tar to the lower part of the trunks of peach and apple trees, to keep off the borer. We should not risk it; stone fruits, especially, are readily injured and often killed by such applications made directly upon the bark. All that the tar would accomplish—preventing the female moth or beetle (for the peach-borer is the young of a moth, and the apple-borer the larva of a beetle,) from laying her eggs. Whatever may be expected from the use of tar, will result from the application of soap, which is perfectly safe. The earth should be well removed from around the base of the tree and the trunk, down to the main roots, rubbed with new bar-soap, or soft-soap may be thinned with water and applied with a brush. This application must be renewed, if it is washed off by rains. The base of the tree may be surrounded with a piece of tarred roofing-paper, its lower edge well below the soil, and its upper edge six inches or more above it. If such paper is not at hand, any stiff, coarse paper may be used in the same manner, and a coating of tar, if desired, applied to this. Probably no such applications will be so complete as to make it unnecessary to examine the trees towards autumn for borers that may have entered in spite of all preventives.

A Straw Puller.

"H. M. S.," Randolph Co., Ind., uses a hay hook which he made as follows: "Select a natural fork, such as may be found on the limbs of many saplings growing in the forest. The fork is trimmed to a sharp point,



A STRAW PULLER.

and with the long handle made from the limb, one has a cheap and handy hook for handling straw and hay."

Forage Crops of the South-West.

PROF. G. C. SWALLOW.

In the *American Agriculturist* for April, I spoke of the great value and importance of the Herbage Crops of the South-West. I now call attention to the Forage Plants, crops which are second only to the former in their value and importance to our farmers. A very large proportion of our herbivorous domestic animals live almost entirely on herbage in pastures, yet a vast number of horses, mules, cattle, and sheep are fed the whole or some part of the year, on forage and other harvested products of the farm.

FORAGE PLANTS OF THE SOUTH-WEST.—There is a great variety of these, both native and naturalized, cultivated in this region. There seems to be a very general impression that the grasses and other Forage Plants do not grow so well in the South and South-West, as further north. But after examining the whole subject very carefully, I am forced to the opinion, by what I learn from others and from my own experience and observation, North and South and West, that the South-West and South are the best portions of the Union for Forage Crops.

LUCERNE is perennial, and one of the best Forage Plants for the Southern part of the South-West. It is very nutritious and well relished by sheep, horses, cattle, and mules, which prefer it to most kinds of forage. It sends its tap roots deep into the soil, grows rapidly, and produces from two to four crops annually, yielding from three to five tons of of hay per acre. It furnishes good pasturage, but is greatly injured or killed by the close cropping of sheep and horses.

BERMUDA GRASS is an excellent forage as well as herbage plant. It is perennial, and will, in pasture, feed more stock than most other grasses. The green grass makes about one-half its weight of hay, which is readily eaten by animals. It grows freely on poor land, and rapidly improves its fertility. But some dislike it because so difficult to eradicate when the land is used for other crops.

SORGHUM.—Several species or varieties of this perennial grass furnish good forage in the South-West. But *Sorghum Halepense*, sometimes called "Johnson Grass" and "Mean's Grass," is most esteemed. It grows from 5 to 10 feet high, and is very productive, and may be cut from two to four times each season, yielding one or two tons per acre at each cutting. This Sorghum is rich in saccharine matter, very nourishing, and is eagerly eaten by sheep, cattle, horses, and mules. *Sorghum nutans*, or Wild Sorghum, has attracted much attention in Arkansas, Missouri, and Kansas, and is one of the native grasses which give prairie hay its superiority over that of our foreign grasses. I have sometimes ridden through this native Sorghum on the bottom prairies of Missouri and Kansas, where it was so tall and thick as to conceal a horseman or an elk thirty feet away. Our native Sorghum has not received that attention from our farmers which it seems to deserve.

INDIAN CORN has furnished more forage to the farmers of the South-West than any other plant. It is grown more extensively than any other crop, primarily for its grain and incidentally for its excellent fodder. But few in the South-West, grow it, strictly speaking, for forage, though it be nutritious and eagerly eaten by all herbivorous animals, either green or cured. Indian Corn is by far the best gift of our American flora, and it becomes more and more indispensable as its good qualities are better known. Many a hale and hearty octogenarian still blesses and eats the corn-cake that made his youth strong, his manhood vigorous, and his old age hale and hearty. So many a bullock and many a porker show the increase of muscle and fat, due to the corn they have eaten. But this pertains to another department of my subject. The stalks, cobs, shucks, leaves and tassels furnish our farmers with a very large proportion of their forage—many, in fact, depend upon the so-called corn-fodder, for nearly all the forage, or "roughness" to take their horses, cattle, and sheep through the winter; while others use it in connection with hay, straw, and herbage for winter food. The best forage obtained from corn raised primarily for the grain, is the leaves stripped, dried, tied in bundles and housed for use. This kind of fodder takes the first rank in our catalogue of forage; but the labor is so great that but little is thus prepared. The next best kind is prepared by cutting the stocks above the ears ("topping") while still green, drying, tying, and housing as was once the general custom in New England. This also requires too much labor for our modes of farming. But the more common mode, where the fodder is much desired, is to cut up and shock, corn and all, while the stalks and leaves are yet green. When cured the corn is husked, and the fodder left out in shocks for use as needed. When well cured at the proper time, the fodder is very good, and eagerly eaten by cattle, horses, and sheep. When, however, the forage is not so much in demand, the stalks are left standing in the field, and after the corn is gathered, the cattle, horses, and pigs are turned in to glean the nubbins and inferior fodder. Many herds are thus taken through the winter.

OATS are very extensively cultivated for forage. They are sown as early as the soil will permit. They are sometimes cut, cured, stacked, and used as hay. Others tie them in sheaves as other cereals. When the grain is threshed the straw is used as hay. But the sheaves are often run through a straw cutter and fed—grain and straw together. Prepared in this way, oats make the best forage known to the South-West for horses.

WHEAT is extensively cultivated for the grain; but the straw is sometimes used as forage. Farmers dispose of the wheat straw in various ways. Some burn it as fast as threshed, others place it in gullies to stop the wash, or allow it to lie on the ground until partly decayed, and then spread it for manure; others still use it to make temporary sheds for stock; but the greater number of farmers preserve and feed it out during the winter. If the wheat is free from rust and other diseases, and is cut at the proper age, and well preserved, the straw and chaff make an excellent forage for winter.

RYE AND BARLEY are grown in small quantities for the grain. The straw, though esteemed inferior to that of wheat, is often used for forage. A common mode of using it is to put it in long ricks in such form as to serve as a protection from wind and storm; and then permit the farm animals to seek its shelter, and eat as hunger dictates.

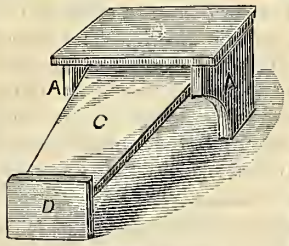
The Layering of Shrubs.

Layering is the simplest of all methods of propagating, and one which the amateur who wishes to multiply his shrubs, and is without the facilities afforded by a propagating house, most frequently resorts to. Indeed there are some shrubs that can with difficulty be propagated in any other manner; the Dutchman's Pipe (*Aristolochia*), for example, is treated in this manner in the nurseries, and the charming little Garland Flower (*Daphne Cneorum*), so difficult to grow from cuttings, roots readily when layered. As stated last month, there are some varieties of the Grape that can only be propagated in this manner, and the usual method of layering the vine was illustrated on page 292.

This method is easy with those shrubs that form branches so near the ground as to allow them to be bent down sufficiently to admit of the burying of a portion a few inches below the surface. After the layer is made, care must be taken that the soil does not become dry. A few flat stones placed on the surface will prevent this. Where it is desirable to layer a shrub, the branches of which are too high for the purpose, a flower-pot may be cut in two, lengthwise, using an old saw; then, if need-be, enlarge the drainage hole, and place the pot around the branch, wiring the two halves together. The pot is then filled with good soil, and, if necessary, supported by a stake. Of course the earth must be kept constantly moist. It is well to "ring" or remove a portion of bark from the stem.

Another Milking Stool.

Mr. "A. R. V.," Wayne Co., N. Y., sends us a design for a Milking-stool, one which is both simple and convenient. The side pieces, *a*, *a*, should be about 10 inches high. The pail rests on *c*, which is 2 feet long. The piece, *d*, should project far enough above the board *c*, to prevent the pail from sliding off the front end.



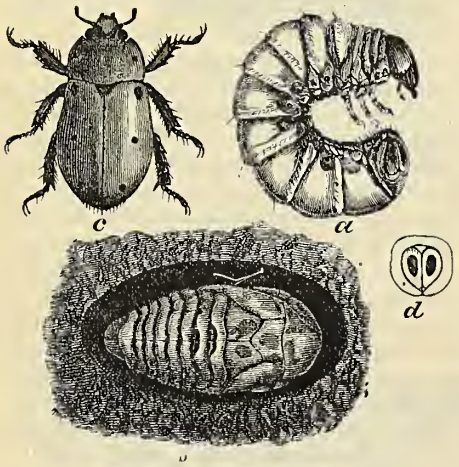
A MILKING STOOL.

Lime Applied to Soils, naturally destitute of it, supplies an essential element of plant food. In most cases, however, the good effects of this substance is due to the chemical action which it exerts in the soil. It renders available the plant food in the soil, with-

out supplying it. Liming is therefore a stimulating process, and can only be practised with success upon soil that is already rich in plant food. Freshly burned lime is the most effective, as it quickly and thoroughly reduces organic matter to an available form. Ground limestone, so highly recommended, is of no special value, except on clay soils, or those destitute of lime, where it acts as a direct fertilizer, and not as a reducing agent.

The Spotted Grape-Beetle, (*Pelidnota punctata*, Linn.)

Whoever works among Grape-vines in almost any part of the country, is quite sure to make the acquaintance of this insect, as it is found from Canada to Florida, and even in the West Indies; it is abundant as far west as Missouri, but what are its western limits, we are not informed. It is the largest of all



THE SPOTTED GRAPE-BEETLE.

the beetles that infest the vine, and is shown in the engraving of its real size. Its color has been variously described as clay-yellow, tile-color, and dull brownish-yellow. There are three black spots on each wing-cover, and one on each side of the thorax; the underside and the legs are of a deep bronzed-green color. The larva of this Beetle bears a close resemblance to the common White Grub, but is of a purer white color, and is distinguished from that by a heart-shaped swelling at the rear end; this is shown separately at *d*. The grub lives in the decayed roots of different trees; while it is not exactly known how long it remains in this state, it is supposed to be for upwards of three years. When it has completed its growth, it forms a cocoon of its own excrement and the surrounding wood, within which it forms a pupa, *b*, and in eight or ten days comes forth as the Beetle. The insect is found on the wild grapes and on the Virginia Creeper; in some seasons it is abundant on cultivated vines, especially in July and August, feeding upon the foliage. Hand-picking is the only remedy, and easily applied.

Tomato Seeds.—These are furnished with an abundance of a slimy mucilage, which many find it difficult to remove. If the seeds are dried as they are taken from the fruit, they will adhere in a mass, and be difficult to separate. Remove the masses of pulp which contain the seeds, place them in a bowl and cover with water. Let them remain where they can be examined daily; fermentation will soon take place, and when the seeds are found to be free from the mucilage, wash and dry them. This will not injure the vitality of the seeds, if the fermentation is stopped as soon as they are clean.

Marketing Fruit and Vegetables.

Those who regularly send their products to the large cities are aware that, in order to meet with a sale, they must conform to the customs of the market. In some western cities, strawberries and other small fruits are received in large trays or drawers, from which they are measured out to the customer. If a New York dealer were to receive a consignment of fruit in this form, he would find it difficult to get rid of it, and it would probably end at the "dump-heap." Those who send their produce to market regularly need no advice in this matter; but it often happens that farmers or others, who are not regular market growers, have an excess of fruit or vegetables which they would like to dispose of. As a rule, if they are near enough to any considerable village or town, especially if a place where there are large factories in which many hands are employed, they will do better to take their produce there than to send it to New York or other large city. In disposing of fruit and vegetables in this manner, a proper attention to appearances will pay. If a farmer has a lot of early apples, he is apt to shake them from the trees, pick them up, large and small, bruised and sound, and throw them all together into the body of his wagon; here, on the way to the place of sale, they are still further bruised, and are not very tempting to the purchaser. Even for a near market, it will pay to present the produce in an attractive manner. Instead of this rude way with apples, let them be picked and assorted, making two grades to take to market, and one to leave at home for the pigs. Instead of throwing them in a heap into the wagon, they should be placed in boxes, baskets, or even barrels, for transportation. It will pay the farmer to have a number of bushel boxes, like that figured in May of last year. These would be most convenient for occasional marketing, and for many uses at home.

If, instead of fruits, vegetables are taken to a near market, equal care should be observed in making a good appearance. Beets, carrots, and other roots should be washed and bunched, tomatoes carefully selected, and placed in boxes, to prevent crushing.

Early apples sent to city markets, if of choice kinds and well selected, will usually bring good returns. They must be gathered before they become soft, and be carefully handled. Half-barrels are convenient packages for these, but they may be sent in bushel crates, which one can make himself.

To Make a Bushel Crate.

Take two end pieces and one middle piece of planed one-inch stuff, each 9 by 15 inches; to these nail laths, 24 inches long, leaving spaces of one inch between them, if for apples and other large articles, but allow less space if string-beans and such small stuff is to be packed. Leave off a few laths until the crate is packed. In packing apples, put them in carefully, shake down gently, and let the crate be so full that some pressure will be required to bring the last laths down to their places.

If a piece of hoop is put around each end of the crates, over the laths, this will allow the air to pass between them, an important matter if the fruit is long in transit.

In sending produce of any kind to market, let both the name of the commission merchant and the sender be distinctly marked upon it, and always advise the consignee by mail of what is sent, and how it is forwarded.

Hardy Perennial Plants.

Hardy perennial plants are, as a general thing, so little trouble, that they are too often treated with entire neglect. Beyond dividing the clumps when they have grown too large they get but little attention. These plants ought not to bloom in the same place in the border for more than three years in succession, whether they need division or not. In autumn, or in very early spring, they should be lifted and reset in another place. Some, especially the Pæony, should always be moved in early autumn; if disturbed in spring, the bloom for that year will be lost. To have perennial plants at their best, the soil must be enriched, a point that is often overlooked. While some of these plants produce little or no seed, others bear a heavy crop. Unless one wishes to save seeds, the flower clusters should be cut away as soon as the bloom is over. This is necessary, not only for the sake of neatness in the borders, but for the good of the plants. Seed-bearing greatly exhausts the plant, and the vitality expended in producing a crop of seeds that are to go to waste, should be devoted to strengthening the plant for next season's bloom. Those beautiful Perennial Phloxes, which now rank as florists' flowers, are given to profuse seed-bearing, and are quite sure to degenerate, and produce smaller flowers and smaller clusters, if allowed to ripen an annual crop of seeds. Those who wish to raise Hardy Perennials from seeds, should recollect that the best time for sowing is as soon as the seeds are ripe. The young plants will usually become strong enough to endure the winter; if they do not, a slight covering of evergreen boughs will take them through safely. Such plants, if set out early the next spring, will usually bloom that year.

A Substitute Gate for a Wire Fence.

Mr. "A. C. C.," Dakota Co., Minn., has a device for opening a passage way in a wire fence. A lever of about 2½ feet long and 2 inches at the larger end, is provided for each

Fig. 1.—FIRST POSITION OF LEVER.

wire. Two half-inch holes are bored in each lever, one two inches and the other eight inches from the larger end. The wood is sawed out on one side of the first hole, making a notch as seen in the engravings. The wires of the fence are cut, and a loop twisted to each end. Insert the loop in the notch,

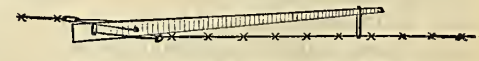


Fig. 2.—SECOND POSITION OF LEVER.

fig. 1, and move the lever into the position shown in figure 2, where it is held with a piece of wire The wires of a fence divided and arranged in this way, may be as tight and secure as before they were cut.

The Black Bass, Northern and Southern.

Those who are fond of fishing do not need to be told what excellent sport the Black Bass affords, or that it is a fish well worth the catching. Indeed it is regarded as a general rule, that the better the fish, the greater the sport in catching it; a saying, the truth of which is strikingly attested by the trout, that easily stands first with both fisherman and epicure. The Black Bass, though less of a game fish than the trout, is a strong biter, and takes the bait with a vigor that gives the greatest pleasure to the angler. While this fish usually runs from one to two pounds in weight, it has been known to reach eight pounds; this is unusual, and even a four-pound bass is rare. On account of its excellent quality as food, the fact that it will live in small ponds, will breed freely, and protect itself from nearly all enemies, the Black Bass is a popular fish for stocking waters that are unfitted for trout, and much has been done within the last twenty years in introducing it in waters formerly occupied by inferior kinds of fish. The young weigh from four to eight ounces when a year old, and after that increase a pound and a half each year. We have spoken of *the* Black Bass, as if there were but one, and most sportsmen and dealers in fish do not recognize any difference between the fish of the northern and the southern localities. Naturalists, however, make of these two or more distinct species. There has been, among naturalists, a great deal of confusion regarding the two species, and Dr. Henshall, in his work on the Black Bass, devotes many pages to the matter. In restoring the early nomenclature, he makes two species, the Small-mouthed Black Bass of the Northern and Western lakes, (*Micropterus dolmieu*, figure 1), and the Large-mouthed Black Bass (*Micropterus salmoides*), a more Southern species. When the two are compared, the southern species will be found to have a head much longer in proportion to the body; besides this, the two differ in the number of spines in the dorsal and other fins. It inhabits streams, rather than lakes and ponds, and occurs from the Ohio, southward, down the Mississippi Basin. It is said to have been unknown in the rivers of the Atlantic States before it was brought there. A little over thirty years ago, a conductor on the Baltimore and Ohio Railroad caught a number of the southern species in Wheeling Creek, and, placing them in the water-tank of the locomotive tender, brought them east, and liberated them in the Potomac. There they multiplied rapidly, and the river and its tributaries, for a distance of some 180 miles, are abundantly stocked with them. Since then, the southern species has been introduced into more northern rivers, the Schuylkill and the Delaware among others. So far as furnishing sport, or as a food fish, there does not appear to be any difference between the Northern and the Southern Black Bass. The Black Bass are taken by the use of minnows and other live-bait, by trolling with spoon-bait and other artificial contrivances, and also by artificial flies. Many a farmer's boy has caught a good mess of this excellent fish by the use of grass-hoppers, or even earth worms, without resort to any of the arts of the angler.

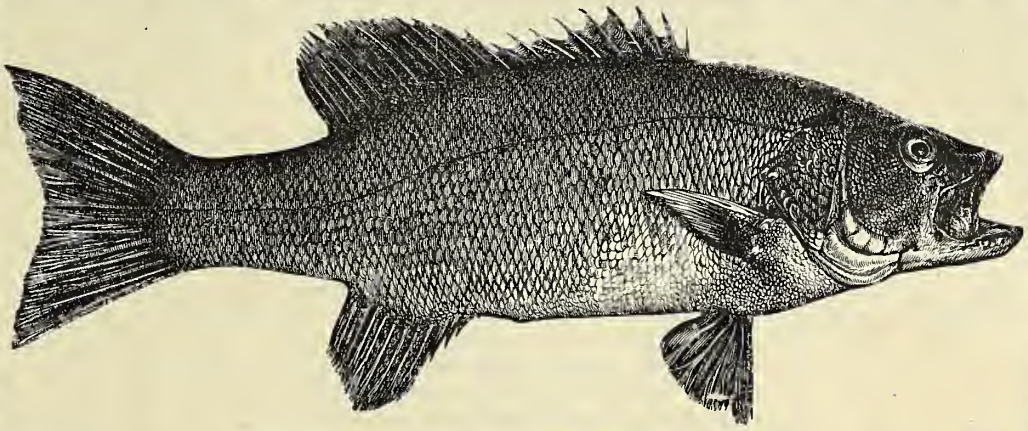


Fig. 1.—SMALL-MOUTHED BLACK BASS (*Micropterus dolmieu*).

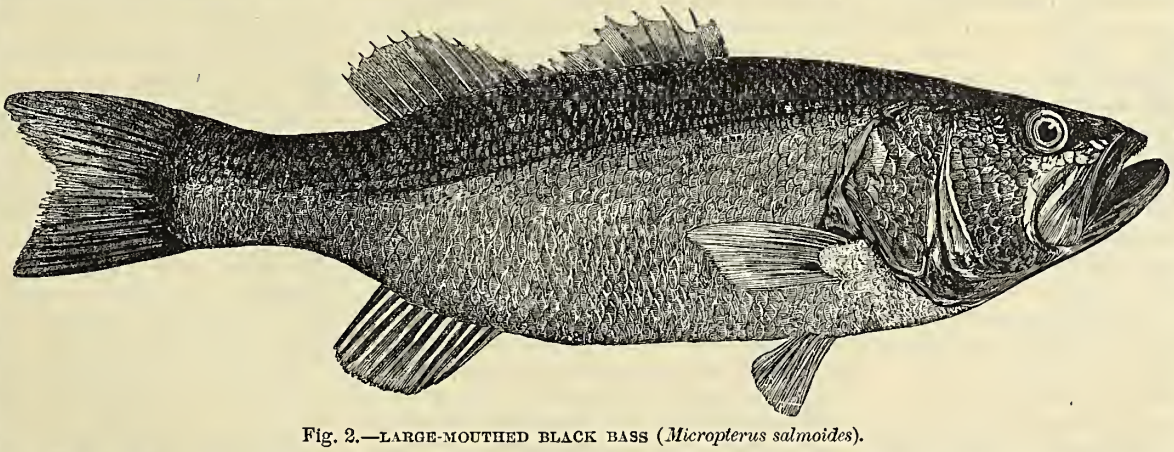


Fig. 2.—LARGE-MOUTHED BLACK BASS (*Micropterus salmoides*).

Breeding Geese.

BY D. Z. EVANS, JR.

With suitable facilities, breeding geese is profitable, and many a farmer's wife has secured home comforts from this source. It is useless to breed geese with too little room; they must have their liberty to do well, and be furnished with large grass runs, as they are great graziers. Their weakness for fruit, and their ability to trample down small fruits and vegetables, makes them undesirable where there are fruit and vegetable plantations. They must be kept away from young chicks, or they will soon destroy them, especially during the hatching season when they are unusually cross and combative.

Selection of Breeding Stock.

Choose only those free from all defects, either individual, or hereditary. It is the rule with good breeders, to keep the same birds two or three years successively for breeding, as the progeny is usually stronger and healthier from such stock, than from younger ones. The ganders, however, rapidly depreciate with age, and also early pair off with single females. In these cases, a young and vigorous gander is substituted. It is best to make the selection for breeding in autumn, just before culling out for fattening, or selling stock to others. No amount of persuasion, or tempting high price, should induce the breeder to part with his best birds, for if he desires to steadily improve his flock, no matter whether it is of so-called common birds, or thorough-breds, he must take his pick first, of the very cream of the flock.

Hatching and Rearing

If geese are set early, two broods can be obtained from each bird, thus securing large flocks for each season's sales. The later hatched birds, generally having favorable weather, will make good weights by late fall, especially if given extra care and food. These late birds make excellent eating about Christmas time. The goose usually makes her own nest, though it is well to help her a little. She is a careful and constant mother, but her love for the water must be restrained until the goslings are a few weeks old, for many dangers, in the form of rats, snakes, turtles, etc., lurk at the water's edge.

Feeding and Fattening.

Goslings do not require much extra feed, if they can get all the fresh and tender grass they want, and unless this can be supplied, breeding geese is not profitable. For the first few weeks some food must be given; this should never be corn-meal, for nine-tenths of the mortality among fledglings, of the various kinds of domestic fowls, can readily be traced to feeding corn-meal. Cottage cheese, in which red pepper (Cayenne,) has been sprinkled, is a very good food, and a quantity of fresh onion tops, chopped up fine, is relished by them. Stale bread soaked in fresh milk, makes an excellent food for all young birds, and the way they develop when fed liberally with it, will astonish any one who has not before tried it with his fowls. The greater part of the management of geese, consists in keeping them (the goslings) free from dampness while they are still "downy," guarding them from the attacks of rats, cats, weasels, and other of their enemies, in housing them well at night, and in giving them a fresh grass run as often as possible. When they become fully feath-

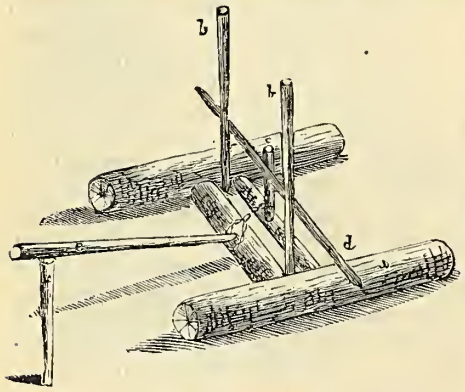
ered, they are abundantly able to take care of themselves; many breeders then let the geese find all their own food, which they can readily do on a large farm, until fattening time, or when the grass begins to get short, when they are brought up, and liberally and regularly fed with corn, still being permitted to have their liberty, until a week or two before they are to be killed, when they are penned up and fed with all they can eat.

Varieties.

In breeding for mere fancy, no doubt the odd or handsome kinds, like the White, or the Brown China, etc., would be satisfactory, but where heavy weights, hardiness, and prolificness is concerned, the Toulouse, Bremen, and Embden are superior sorts, and mature early.

A Rail Holder or "Grip."

Drive two posts, *b*, *b*, three feet long, firmly in the ground, four feet apart, between two parallel logs, *a*, *a*. A third post or "jaw," *c*, somewhat shorter, is mortised in a block



A RAIL HOLDER.

placed between the logs, and out of line with, or to one side of the posts, *b*, *b*, so as to hold a rail, *d*, between the three. A lever, *e*, 8 feet long, and heavy at the outer end, is mortised into another block, which is placed on the side of *b*, *b*, both blocks bearing against the posts. The lever and jaw are connected by a chain passing around the lever, *over* its block and through a hole in the jaw. An iron pin through a link couples them just enough apart to hold a rail firmly when the lever is on the ground. To remove the rail, raise the lever and rest it upon the small post, *f*, at the farther end, which slackens the chain.

Farm Yard Manure.—The composition of the manure made in the barn-yard, is determined by the character of the animals, and the food which they receive. In case of a full grown animal, that is neither gaining or losing in weight, the manure will contain the same amount of nitrogen, and ash constituents, as were present in the food consumed. The animal is like a machine for the conversion of the principal fertilizing constituents of the fodder, into a more available form for plant food. If an animal is gaining in flesh, producing milk, or growing wool, etc., its manure will be less valuable. The character of food affects the quality of manure. A diet of straw can give only a poor manure, while if the animal has a good supply of rich food, as oil-cake and bran, its manure will be correspondingly rich in nitrogen, and ash constituents. Aside from the animal and the food it gets, the value of a manure is governed greatly by the treatment it receives after being dropped. Save the urine.

Agricultural Shows.—Their Abuses.

BY COL. MASON C. WELD.

Why do we call these Shows, Exhibitions or Expositions, "Fairs?" Goods are not there for sale. A few sales are made and there ought to be more; but they are not Fairs.

The managers and the public assume that animals and articles exhibited come fairly in competition for the prizes,—which, by the way, are absurdly called "premiums." No doubt the managers intend that all exhibitors shall have an equal opportunity to present their articles and to have them fairly judged upon their merits. In some cases this really occurs, and managers who fail to do all in their power to secure this, neglect their duty.

If the entry books or the stock and articles in the show may be examined by exhibitors before the entries are closed, and an exhibitor may thus learn what will be shown by a competitor, he may modify his own entry, with the view of capturing prizes, by artifice rather than of securing them by merit.

I have known a favored exhibitor after a sight of the books to change his entire set of entries. He could tell very nearly what cattle were to be shown and in which classes he would be beaten and in which pretty sure to win. I believe this is a common practice of some men in almost every Agricultural Society, and of some who have official connection with the societies. When entries are closed a month in advance, the only way that any such advantage may be gained by one exhibitor over another, is for an exhibitor to make a large number of entries, but to bring or present only such as he thinks will win.

It should not be forgotten either by managers of shows, or by the general public who look on, or indeed by the judges and jury who make the awards, that with many exhibitors the honor of winning is not so much valued as the money won, and that with a large class the *honor* counts for less than the trade or consideration which that honor brings with it. To such, a prize dishonorably gained is just as valuable as one fairly won. This is the reason why an exhibitor will often make great efforts to prejudice the jury in his favor, and so secure the award.

Influence is brought to bear upon the jury of awards in various ways. One man will openly address a judge in praise of his competitor's exhibit, and loudly call attention to the best points, but quietly regret certain defects, or express doubts about the age or breeding of the animals, or other points affecting the competing exhibit. Sometimes a third party discusses matters with a judge in a disinterested, friendly way, talking up his friend's stock or goods and trying to prejudice him against other exhibits. It is very hard to guard a jury against such influence. I have known the principal officers of Agricultural Societies take judges to one side and indicate how in their judgment the awards should go, by calling special attention to certain entries of those who were known to be on terms of personal friendship with them, and disparaging others—or damning them with faint praise. There are many men appointed as judges who are unfit to serve, and who know it themselves. These are wide awake to watch and listen and find out what practical men think, and it is very easy, if it is known that they are not strong, to influence them. An exhibitor who goes to the show to get prizes, by fair means or foul, will measure such a man at the first glance, and "go for him," as the saying is. A weak judge is of no account in any way. A jury of two judges works better than one of three, and a single good judge better than either; but he must be a man to be depended upon.

The system, especially prevalent in small societies, of distributing the prizes about so as to "encourage" all exhibitors, and make everybody happy, is most pernicious. At such shows it matters very little who the judges are. The prizes are worth nothing any way as honors, and very little in money, and so long as such a system is in vogue, they will be worth no more.

If the jury could be from a distance, and have valuable awards to make, and be real judges of the animals or articles of whose merits they decide, and be let alone, to make their awards without knowing that this, that, and the other are shown by the Hon. Mr. Blank, by Judge So-and-So, or by the President of the Society, and without knowing that certain animals belong in one herd, others in another, and so on, we would have awards which would be worth something. True, 1st, 2d, and 3d prizes might go to the same man, and the President of the Society, or the member of Congress, might go without; but what of that, so long as a fair, disinterested judgment is given?

What is true of animals, is true of goods of all kinds. One rule should prevail everywhere, every time—the prizes should go to the article or animal, and not to the exhibitor. It is remarkable how few of the men who are picked up as judges at the smaller fairs about the country, have any idea that they ought to consider this, the merits of the animal or article solely. Nothing is more common than such remarks: "We can't do that; we shall be giving the same man both 1st and 2d; that won't do." Or, "If we give him 1st, he will be taking 1st in two or three classes; we ought to change that."

Juries are very imperfectly instructed how to judge. They need instruction—definite rules, plainly stated, not only in printed form, but verbally. A great many men have such an idea of their own knowledge and abilities, that they will not read the printed rules. To such it is essential that some officer of the Society should most distinctly lay down the law by word of mouth.

There is always more or less hurry-scurry at the time of the Show, and questions which come up then cannot always be discussed and settled. For instance, who is to decide to throw out an entry for fraud or mistake on the part of the exhibitor—the Judges or the Society? Suppose the judges suspect a "pair of geese" to be both of the same sex, or a heifer in the yearling class to be two years old, or an animal to have artificially-colored horns or skin? Many a jury of judges will decide that they have nothing to do with these questions, but decide upon the entries presented to them, presuming them to be all right. Thus, of course, great injustice is done.

I might show how Agricultural Exhibitions, which ought to be, and, in spite of abuse, are of great service to the community, are prostituted to private gain in mean, underhand ways, which are enough to disgust one who sees them worked out, with all such Shows, but this is enough; and if published in the *American Agriculturist* for August, will put exhibitors, spectators, and officers of Societies on their guard.

Law for Farmers.—Promissory Notes, and Patent Right Rogues.

H. A. HAIGH, LL.B., DETROIT, MICH.

Every farmer doubtless, sooner or later, has occasion to give or take a promissory note. It is therefore desirable that he know something about his rights and liabilities connected with them. Particularly is it desirable that he understand somewhat the legal incidents of these peculiar contracts (for such they are), from the fact that they are often made the vehicle by which the villainous rogue—oftener the patent right rogue than any other—perpetrates his crime upon the unwary.

A promissory note is a written agreement to pay a certain sum of money at a certain time. It must be definite and unconditional. It is therefore in the nature of money; being negotiable, and where payable to bearer, the property in it passes by mere delivery of the paper on which it is written. It is not subject to all the defences that are good as against other contracts. For example: It is generally good in the hands of an innocent holder, no matter though the maker of it had lost it, or it had been stolen, or obtained from him by fraud. This may be the case, even though it has been altered or "raised," as where I give my note signed in blank to a person, authorizing him to fill in a certain amount, as $10, and he fills in a larger amount, as $100, and sells it to an innocent purchaser. I must pay the larger amount, for I it was who enabled the fraud to be committed; and an old maxim of the law holds that where one of two innocent persons must suffer from the wrongful acts of a third, the loss must be borne by the one who enabled such third person to occasion it. The justice of this is obvious, and every farmer will appreciate the necessity of protecting, in the largest degree, the rights of *bona fide* holders of negotiable instruments, which form part of the currency of the country, and if subject to all the defences of other written contracts, would be deprived of their main value.

It will be seen, then, that these instruments become to the shrewd rascal a convenient means of swindling the unsuspecting; for, having once got them in his possession, no matter how fraudulently, they become, in most instances, practically money, and their makers cannot help themselves. It behooves farmers therefore to be very careful in the matter of giving notes, and to always be certain of getting value received for them; for they may be certain of having to pay them, whether they get anything in return or not. A class of miscreants who have in years past successfully operated by this means, have tramped over the country with the apparent object of selling patent rights. Had they confined themselves to the legitimate sale of patent rights or of patented articles, they would have been less intolerable, though they have forced many useless things upon the public, and induced many a farmer, by their voluble persuasiveness, to pay dearly for things which he did not want. But their real object has often been far less innocent. A favorite dodge with them has been to get the farmer to accept an agency for the sale of the articles in his town or county, securing his signature to a printed contract for that purpose—underneath which is adroitly concealed a printed promissory note, which the farmer unwittingly signs, supposing it to be a duplicate of the contract. A few months afterwards he is confronted by a demand for the payment of his note by some shaver in a neighboring town, who bought the same in good faith. To avoid a law suit, the farmer probably ends the matter by compromising with the holder of the note, or by paying its full amount out of his hard-earned savings. This is but one of many similar methods employed by these villains, but it has been used to such an extent in some parts of the country, as to lead to special legislation. In Michigan, a statute enacted for the special "benefit" of these rogues, requires that every note given for the right to make, use, or sell any patented invention shall have written across its face, "*Given for Patent Right*," and such notes are made subject to all defences good between original parties, no matter in whose hands they are; and the Supreme Court of that State had, prior to the passage of that law, held that a note, the signature to which had been obtained in the manner above indicated, was in the nature of a forgery, and absolutely void. But this is contrary to the doctrine in many other States, and farmers generally are not thus protected. As stated, therefore, it behooves them to be careful what they sign. A good rule would be—never give a promissory note unless absolutely necessary; never give one without value received; never sign any paper in the hands of a stranger.

Happily, this means of swindling seems to be decreasing. This indicates, I apprehend, that the farming communities, through the influence largely of the agricultural press, have become too enlightened for these swindlers to successfully practice their operations.

Saving Vegetable Seeds.

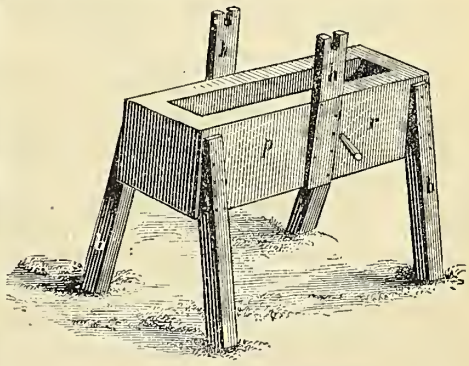
If there are many varieties of the same vegetable in a garden, it is impossible to save the seeds of some in an unmixed state. Sweet Corn, and all of the Squash family, are quite sure to "mix." On the other hand, Peas and Beans rarely cross. If one saves seeds of any vegetable, let it be of the best. Instead of leaving the last Peas on the vines for seed, set apart a portion of a row for seed, and let none be picked from it. By proper care, the quality of a vegetable may be improved. In saving Lima Beans, we have for several years selected only those with four beans in the pod; as a consequence, the greater number of pods in the whole crop now have four beans. The selection of the first ripened and best formed Tomatoes for seed will have a marked effect upon future crops, and this is the case with all other vegetables. If one has a choice Melon he would preserve in its purity, the surest method is to fertilize a few female flowers. Take a male flower of the same kind that is shedding its pollen, remove the corolla, to expose the stamens. Select a female flower that is just ready to open, but has not been visited by insects; open it, and apply the stamens to the pistil of that flower. Cover the flowers thus operated upon by a bit of muslin until the fruit begins to grow.

The Barn Yard.—The summer showers fill up the low places in the barn-yard with water, that has leached through the manure, and is rich in fertilizing materials. This should be kept from running away by the use of litter that will absorb the liquid. The American farmer is gradually gaining a knowledge of the fact that manure is too valuable to be wasted, and that the making of a large amount of it, of good quality, is an important part of profitable farm work. To this end sheds will and should be more extensively used to shelter manure, for it can be shown beyond a doubt, that the best quality of this natural fertilizer, can only be made when kept from the exposure of the open yard. Look well to the barn-yard manure.

A Cheap and Durable Grindstone-Box, and Hangers.

L. D. SNOOK, YATES CO., N. Y.

A good grindstone well hung, is one of the most valuable aids about the farm or workshop. Those who cannot afford to buy a very neat and handy grindstone frame of the hardware dealers, will find a frame and hangers shown in the engraving, that for convenience, cheapness, and durability, is hard to excel. The frame consists of a well-seasoned "trough" of pine or other wood, fourteen inches square (or even one foot square), and from two and a half, to three and a half feet in length, to which legs are nailed at *b*, *b*, four inches wide, one and a half inch thick, and bevelled at the top. Supports or hangers, *h*, *h*, are nailed firmly to the side as indicated; they should be hardwood, and of a size to correspond with dimensions, and weight of stone. The shaft may be of iron or wood; fit a piece of sheet lead, or piece of lead pipe properly flattened out, in the top of each hanger; this will cause the shaft to turn easily, and prevent all squeaking for want of oil. The wooden plug at *r*, is for drawing off the water after each using of the stone, and should in no case be neglected. If one side of the stone



A BOX FOR A GRINDSTONE.

is left standing in water, it softens, and the surface will soon wear quite uneven. After the box is completed, give it one heavy coat of boiled oil; then in a few days apply a coat of lead and oil, and with even common care, it will last a lifetime. When the stone becomes worn, it is kept down to the water by simply deepening the groove in the top of the hangers. Always buy a long shaft for a grindstone, for in this age of reapers and mowers, the cutting apparatus of which must be ground, a long shaft for a grindstone is almost a necessity, or truly a great convenience. If the grindstone is to stand outdoors, always cover it with a closely fitting wooden box when it is not in use.

The Farms of the United States.

Their Total Number in 1870 and 1880, and the number in each State and Territory in 1880.—The Leading States arranged in Groups showing the number of Farms of different sizes, from less than Three Acres to over One Thousand Acres each.

The tables of figures herewith may at first sight appear to be "dry reading" to some, but a little examination will reveal a very large amount and variety of interesting information, presented in the most condensed form. The figures are epitomized partly from the official Census for 1880 (except in the four lines marked with a *), partly from advanced figures kindly furnished to the *American Agriculturist* by Mr. C. W. Seaton, Supt. Census, etc. After repeated efforts, we have been unable to obtain the four * sets, except for the first two columns giving the total number of farms in 1870 and 1880, which are official. The detail figures are not yet made up at the Census office, and we insert estimates based upon comparisons of the population, etc., of similarly situated States and Territories—founding the detail estimates of Massachusetts, for example, upon the official figures for Connecticut, and those of Tennessee upon those of Kentucky. Our detail estimates for Texas and for the seven new States and Territories grouped together, may be somewhat wide of the mark in individual cases, but this will not materially affect the total results, and have no effect upon the other comparisons.

The Total Number of Farms, Families, and Dwellings.—The number of farms exceeds four millions, or about one farm to every twelve inhabitants, old and young. The total number of families in the United States in 1880, was 9,945,916. There were therefore about 100 farms for every 243 families, or rather more than two farms to every five families—cities, villages and country included. About half of the entire population are engaged in agriculture.—The dwellings, in city and country, number 8,955,812, a little more than double the number of farms.—The total of farms for 1870 are also given, but that Census was far less thorough than for 1880. According to the present figures for 1870, there were then 2,949,035 farms. The reports published at that time gave the total number of farms at only 2,659,985, and evidently too low.

Number of Farms, by States.—Illinois leads off with over a quarter of a million. The rank of the States is shown in the following tables:

GROUP A.—HAVING OVER 200,000 FARMS.

Illinois.....255,741	New York...241,058	Penn..... 213,542
Ohio.....247,189	Missouri....215,575	*Total.* ...1,173,105

GROUP B.—HAVING OVER 150,000 FARMS.

Indiana.....194,013	Kentucky...166,453	N. Carolina..157,609
Iowa..... 185,351	Tennessee ..165,650	Michigan....154,008
Texas.....174,184	*Total*.....	1,197,268

GROUP C.—HAVING OVER 100,000 FARMS.

Georgia.....138,626	Alabama....135,864	Virginia.....118,517
Kansas..... 138,561	Wisconsin..134,322	Mississippi..101,772
Total.....		767,662

The first five contain over 28 per cent of all the farms in the entire 47 States and Territories; while the ten States in groups *A* and *B*, with 2,030,535 farms, contain just about as many as all the 37 others; and the 18 States in the three groups number very nearly 78 per cent of all the farms.

Most Farms to the Area of land surface (excluding water areas): Connecticut leads with about six and one-third (6.32) farms for each square mile, followed by Ohio, Rhode Island, etc., thus:

FARMS TO SQUARE MILE.

Conn.....6.32	N. Y.....5.06	Ill.....4.56	Md.....4.11
Ohio.....6.08	Penn.....4.80	Del.....4.42	Vt.....3.87
R. I.....5.73	N. J. 4.60	Ky..... ...4.16	Tenn.....3.34

In Great Farms, (and Plantations,) having 1,000 acres or more, Georgia leads, followed thus:

GROUP D.—FARMS OVER 1,000 ACRES.

Georgia.....3,197	Mississippi.....1,833	Virginia.....1,563
California.....2,531	N. Carolina....1,721	Louisiana.....1,319
Alabama.....1,868	S. Carolina.....1,635	Kentucky.....1,112

Texas and Tennessee probably belong in this group.

GROUP E.—FARMS OF 500 TO 1,000 ACRES.

Georgia...7,017	Miss..... .3,976	Ill..... 3,249	Ind.....1,320
Va.....5,561	Ky..... ...3,802	Iowa.....2,298	N. Y.....1,315
N. C.....5,063	S. C.....3,693	La.. 2,159	Ohio.....1,309
Ala... ...4,645	Mo.....3,536	Ark.....1,793	Oregon...1,280

Tennessee and Texas probably belong to this group also.

TABLE A.—The Farms of the United States and Territories.

States.	Total Number of Farms. 1870.	1880.	Number Occupied by Owners.	Rented for Money.	No. Rented on Shares	1,000 Acres and Over.	500 to 1,000 Acres.	100 to 500 Acres.	50 to 100 Acres.	20 to 50 Acres	10 to 20 Acres	3 to 10 Acres	Under 3 Acres
Alabama.....	67,382	135,864	72,215	22,833	40,761	1,868	4,645	44,254	26,447	41,721	13,055	3,597	277
Arkansas....	49,424	94,433	65,245	9,916	19,272	648	1,793	37,976	21,787	19,282	10,780	2,070	97
California...	23,724	35,934	28,810	3,209	3,915	2,531	3,108	20,214	3,969	3,475	1,430	1,641	143
Connecticut..	25,508	30,598	27,472	1,920	1,206	17	133	9,511	8,107	7,288	3,247	2,261	34
Dakota.....	1,720	17,435	16 757	72	606	74	246	16,253	547	210	63	36	6
Delaware....	7,615	8,749	5,041	511	3,197	9	66	4,631	2,039	1,205	484	311	4
Florida.....	10,241	28,438	16,198	3,548	3,692	377	652	6,562	4,381	7,640	2,456	1,301	69
Georgia.....	69,956	138,626	76.451	18,557	43,618	3,491	7,017	53,635	26,054	36,524	8,694	3,110	101
Illinois.....	202,808	255,741	175,497	20,620	59,624	649	3,249	116,562	76,080	46,594	8,799	4,170	138
Indiana.....	161,289	194,013	147,963	8.582	37,468	275	1,320	72,103	64,030	43,403	8,019	4,663	200
Iowa.....	116,292	185,351	141,177	8,421	35,753	364	2,298	95,163	58,519	23,488	3,334	2,063	122
Kansas.....	38,202	138,561	115,910	4,438	18,213	235	1,169	93,823	31,078	9,539	1,658	997	62
Kentucky....	118,422	166,453	122,426	16,824	27,203	1,112	3,802	69,472	40,594	30,673	13,728	6,759	313
Louisiana...	28,481	48,292	31,286	6,669	10,337	1,319	2,159	15,081	8,501	12,626	6,708	1,848	100
Maine.....	59,804	64,309	61,528	1,628	1,153	116	378	25,035	22,025	11,489	3,132	2,309	95
Maryland.....	27,000	40,517	27,978	3,878	8,661	77	728	19,792	7,768	5,948	3,298	2,760	151
Massachus's*	26,500	38,406	34,406	2,500	1,500	22	167	12,000	10,000	9,000	4,250	2,900	67
Michigan.....	98,786	154,008	138,597	5,015	10,396	84	408	45 391	55,777	45,029	4,514	2,737	68
Minnesota....	46,500	92,386	83,933	1,251	7,202	145	741	56,375	25,530	8,003	952	604	36
Mississippi..	68,023	101,772	57,214	17,440	27,118	1,833	3,936	35,498	19,318	26,836	11,936	2,836	84
Missouri.....	148,328	215,575	156,703	19,843	39,029	685	3,536	97,359	58,030	43,736	8,647	3,460	122
Nebraska....	12,301	63,337	51,963	1,948	9,476	118	666	41,542	16,652	3,701	703	355	45
N. Hampshire	29,642	32,181	29,566	1,237	1,378	104	385	13,446	8,716	5,662	2,036	1,721	111
New Jersey..	30.652	34,307	25,869	3,608	4,830	60	147	10,674	9,617	7,682	3.721	2,342	64
New Mexico.	4,480	5,053	4,645	22	386	43	56	910	484	849	1,055	1,633	14
New York...	216,253	241,058	201,186	18,124	21,748	281	1,315	96,273	70,661	40,386	17,229	14,543	370
No. Carolina.	93,565	157,609	101,887	8,644	44,078	1,721	5,063	61,806	34,007	34,148	13,314	7,278	277
Ohio.....	195,953	247 189	199,562	14,834	32,793	252	1,309	92,645	78,298	49,365	14,157	10,951	212
Oregon.....	7,587	16,217	13.938	741	1,538	352	1,280	11,791	1,728	679	207	172	13
Pennsylvania	174,041	213,542	168,220	17,049	28,273	244	922	78,877	63,927	38,331	16,976	14,017	250
Rhode Island	5,368	6,216	4,980	989	247	5	48	2,029	1,706	1,391	607	418	12
So. Carolina.	51,889	93,864	46,645	21,974	25,245	1,635	3,693	27,735	13,612	25,517	12,519	7,035	118
Tennessee*..	118,141	165,650	122 150	16,500	27,000	1,100	3,800	69,100	40,400	30,500	13,700	6,730	320
Texas*.....	61,125	174,184	125,984	13,200	35,000	1,500	4,084	123,000	37,500	3,000	2,725	2,175	200
Utah.....	4,908	9,452	9,019	60	373	9	36	1,916	2,056	3,688	1,313	416	18
Vermont.....	33,837	35,522	30,760	2,164	2,598	97	585	19,185	7,822	3,973	1,767	1,488	5
Virginia....	73,849	118,517	83,581	13,392	21,594	1,563	5,561	53,101	22,144	19,822	9,663	7,012	101
Washing'n T.	3,127	6,529	6,058	209	262	62	252	5,239	611	207	71	74	13
W. Virginia..	39,778	62,674	50,673	4,292	7,709	845	2,255	30,301	14,461	8,488	3,463	2,797	64
Wisconsin....	102,904	134,322	122,163	3,719	8,440	109	666	60,296	44,719	22,718	3,200	2,516	98
Ariz.; Col.; D. C.; Ida.; Mon.; Nev.; Wyoming.	* 4,595	10,972	* 7,100	* 2,500	* 1,372	* 400	* 500	* 8,000	* 1.322	* 400	* 150	* 100	* 100
Total.....	2,949,035	4,008,907	3,011,906	322,736	674,265	26,631	74,174	1,754,501	1,041,020	783,716	237,260	135,701	4,694

*Estimated, except for the first two columns, which are Official.

Of Medium Farms, 100 to 500 acres, generally 160 acres, or "quarter sections," the following fifteen States have over 40,000 each, viz.:

GROUP F.—FARMS OF 100 TO 499 ACRES.

Illinois..116,562	Ohio.....92,645	N. C.....61,806	Virginia.53,101
Mo..... 97,359	Penn 78,877	Wis. 60,296	Mich.....45,391
N. Y.... 96,273	Ind.....72,103	Minn 56,375	Neb.....41,542
Kansas.. 93,823	Ky.....69,472	Georgia.53,635	Tex., Tenn.(?)

Of Small Farms, 50 to 100 acres, many of those in the West being "half" or "quarter sections," fifteen States have over 25,000 each, viz.:

GROUP G.—FARMS OF 50 TO 99 ACRES.

Ohio.....78,298	Penn....63,927	Wis..... 44,719	Ala.....26,417
Illinois..76,080	Iowa.....58,519	Ky.....40,594	Georgia..26,054
N. Y.....70,661	Mo.....58,030	N. C.....34,007	Minn 25,530
Ind.....64,030	Mich....55,777	Kansas. .31,078	Tex., Tenn.(?)

Of Very Small Farms, having 20 acres and under 50 acres, Ohio leads with nearly 50,000, and 16 States contain over or nearly 20,000 such farms:

GROUP H.—FARMS OF 20 TO 49 ACRES.

Ohio.....49,365	Iowa.....43,403	Georgia..36,524	Iowa.... 23,488
Illinois..46,594	Ala.....41,726	N. C.....34,148	Wis.....22,781
Mich.....45,029	N. York.40,386	Ky.....30,673	Va.....19,822
Mo.....43,736	Penn 38,331	Miss.....26,836	Ark.....19,283

Of Diminutive Farms, under 10 acres each, there are about 135,000 reported. These probably consist largely of those cultivated as market gardens, near cities, and with specially valuable products, as Tobacco and early vegetables, etc. The twenty States having over 2,100 of these reported are:

GROUP I.—FARMS OVER 3 AND UNDER 10 ACRES.

N. Y.....14,543	Virginia. 7,012	Missouri. 3,460	Wis.....2,516
Penn.....14,017	Ky..... 6,759	Georgia...3,110	N. J.....2,342
Ohio.....10,951	Indiana...4,663	W. Va....2,797	Miss..... .2,336
N. C.....7,273	Illinois...4,170	Md.....2,760	Maine....2,309
S. C.....7,035	Alabama.3,597	Mich.....2,737	Conn.....2,261

GROUP K.—FARMS UNDER 3 ACRES.

New York.370	Ohio.....212	Iowa. 122	Virginia....101
Kentucky..313	Indiana 200	Missouri..122	Louisiana..101
Alabama...277	Maryland..151	S. Carolina.118	Wisconsin.. 98
N. Caroli'a.277	California .143	N. Hamps..111	Arkansas.. 97
Pennsyl'a..250	Illinois.....138	Georgia. ...101	Maine..... 95

Dairy Products of the United States.

The last three columns of the large table (B) supply some striking, as well as interesting items. The Milk consumed as milk (529,979,992 gallons) would fill a round lake 5 feet deep and about 4,300 feet (five-sixths of a mile) in diameter. If loaded upon railway cars, 100 cans of 40 gallons each to the car, 13,249 cars would be needed, and these would make up a train over 100 miles long, allowing 40 feet to the car.

In Milk used, Illinois leads with 45,419,719 gallons, followed by Massachusetts, with two-thirds as much, and New York with over half the quantity.

In Butter, made on the farm, not including factory products, New York leads with 111,922,423 lbs., followed by Pennsylvania, Ohio, etc., thus:

POUNDS OF BUTTER BY CENSUS OF 1880.

N.Y. 111,922,423	Iowa.55,481,958	Ind...37,377,797	Vt....25,240,826
Pa... 79,386,012	Ill...53,657,943	Wis...33,353,045	Kans.21,671,762
Ohio 67,634,263	Mich.38,821,890	Mo...28,572,124	Minn 19,161,385

These twelve States produced just three-fourths, or 75 per cent, of all made in the United States and Territories. Six others produced over 10,000,000 pounds, and twelve others over 5,000,000 pounds.

In Cheese, made on the farm, not including factory products, New York also leads far ahead with 8,362,590 pounds, followed by California and others producing over 500,000 pounds each, thus:

POUNDS OF CHEESE BY CENSUS OF 1880.

N. Y..8,362,590	Ohio. .2,170,245	Iowa..1,075,988	Conn....826,193
Cal....2,566,618	Vt.... 1,545,789	Ill.....1,035,069	Mass...817,028
Wis ...2,281,411	Maine.1,167,730	Penn..1,008,686	N. H....807,676

Three States, New York, California, and Wisconsin, are credited with about one-half of all farm-made Cheese in the whole country, while the above 12 States produced seven and a half times as much Cheese as all the other 35 States and Territories.

Farm Animals in the United States.

Nearly One Hundred and Thirty-one Millions.—Sundry Surprising and Interesting Figures, Comparisons, Etc.

The full Census Reports for 1880, when completed, will present many useful statistics.—In the meantime, we have prepared from official advance sheets for our readers several items, comparisons, etc., which will be interesting, and serve for future reference, in a more condensed form than they will appear in the official tables. If, before examining the following statements, any reader will ask himself, and answer, in what States we shall find the greater number of Horses, Mules, Cows, Sheep, Swine, etc., we think the one who does so will be much surprised at the facts brought out by the official enumerations epitomized on next page. The numbers given take into account chiefly the animals in possession of owners or cultivators of farms, *excluding* neat cattle, sheep, and other animals kept on western ranches, on public lands; also excluding Horses, Mules, Cows and Swine in cities and villages, not used for farming purposes; also excluding spring lambs of 1880, and reckon-

TABLE B.—Farm Animals of the United States and Territories.

1880. States.	Horses.	Mules and Asses.	Working Oxen.	Milch Cows.	Other Cattle.	Shorn Sheep.	Swine.	Wool sheared 1880, Lbs.	DAIRY PRODUCTS, 1879. Milk used Gallons.	Butter, Pounds.	Cheese, Pounds.
Alabama	113,950	121,081	75,534	271,443	404,213	347,533	1,252,462	762,207	267,387	7,997,719	14,491
Arizona	6,708	891	984	9,156	34,843	76,524	3,819	313,698	42,618	61,817	18,360
Arkansas	146,333	87,082	25,444	249,407	433,392	246,757	1,565,098	557,368	316,858	7,790,013	26,301
California	237,710	28,343	2,288	210,078	451,941	4,152,349	603,550	16,798,036	12,353,178	14,084,405	2,566,618
Colorado	42,257	2,581	2,080	28,770	315,989	746,443	7,656	3,197,391	506,706	860,379	10,867
Connecticut	44,940	539	28,418	116,319	92,149	59,431	63,699	230,133	12,289,893	8,198,995	826,195
Dakota	41,670	2,703	11,418	40,572	88,825	30,244	63,394	157,025	415,119	2,000,955	39,437
Delaware	21,923	3,931	5,818	27,284	20,450	21,967	48,186	97,946	1,132,434	1,876,275	1,712
D. Columbia	1,027	68	4	1,292	271	.....	1,132	.....	496,789	20,920	.....
Florida	22,636	9,606	16,141	42,174	409,055	56,681	287,051	162,810	40,967	353,156	2,406
Georgia	98,520	132,078	50,026	315,073	544,812	527,589	1,471,003	1,289,560	374,645	7,424,485	19,151
Idaho	24,300	610	737	12,838	71,292	27,326	14,173	127,149	15,627	310,644	20,295
Illinois	1,023,082	123,278	3,346	865,913	1,515,063	1,037,073	5,170,266	6,093,066	45,419,719	53,657,943	1,035,069
Indiana	581,444	51,780	3,970	494,944	864,846	1,100,511	3,186,413	6,167,498	6,723,840	37,377,797	367,561
Iowa	792,322	44,424	2,506	854,187	1,755,343	455,359	6,034,316	2,971,975	15,965,612	55,481,958	1,075,988
Kansas	430,907	64,869	16,789	418,333	1,015,935	499,671	1,787 969	2,855,832	1,360,235	21,671,762	483,987
Kentucky	372,648	116,153	36,166	301,882	505,746	1,000,269	2,225,225	4,592,576	2,513,209	18,211,904	58,468
Louisiana	101,423	76,674	41,729	146,454	282,418	135,631	633,489	406,678	256,241	916 089	7,618
Maine	87,818	298	43,019	150,845	140,527	565,918	74,369	2,776,407	3,720,783	14,103,966	1,167,730
Maryland	117,796	12,561	22,216	122,907	117,387	171,184	335,408	850,084	4,722,944	7,485,871	17,416
Massachus'ts	59,629	243	14,571	150,435	96,015	67,979	80,123	299,089	29,513,190	9,609,821	817,028
Michigan	378,778	5,083	40,393	384,573	466,660	2,189,389	964,071	11,858,497	7,898,273	38,821,890	440,540
Minnesota	257,282	9,019	36,344	275,545	347,161	267,598	381,415	1,352,124	1,504,407	19,161,385	523,138
Mississippi	112,309	129,778	61,705	263,178	387,452	287,694	1,151,818	734,643	427,492	7,454,657	4,239
Missouri	667,776	192,027	9,020	661,405	1,410,507	1,411,298	4,553,123	7,313,924	3,173,017	28,572,124	283,484
Montana	35,114	858	936	11,308	160,143	184,277	10,278	995,484	41,165	403,738	55,570
Nebraska	204,864	19,999	7,234	161,187	590,129	199,453	1,241,724	1,282,656	625,783	9,725,198	230,819
Nevada	32,037	1,258	765	13,319	153,137	133,695	9,080	655,012	149,889	335,188	17,420
N.Hampshire	46,773	87	29,152	90,564	112,639	211,825	53,437	1,060,589	5,739,128	7,247,272	807,076
New Jersey	86,940	9,267	2,022	152,078	69,786	117,020	219,069	441,110	15,472,783	9,513,835	66,518
New Mexico	14,547	9,063	16,432	12,955	137,314	2,088,831	7,857	4,019,188	10,036	44,827	10,501
New York	610,358	5,072	39,633	1,437,855	862,233	1,715,180	751,907	8,827,195	23,196,553	111,922,423	8,362 590
No. Carolina	133,686	81,871	50,188	232,133	375,105	461,638	1,453,541	917,756	44,679	7,212,507	57,380
Ohio	736,478	19,181	8,226	767,043	1,034,917	4,902,486	3,141,333	25,003,756	4,680,153	67,634,263	2,170,245
Oregon	124,107	2,804	4,132	59,549	352,561	1,083,162	156,222	5,718,524	22,754	2,443,725	153,198
Pennsylvania	533,587	22,914	15,062	854,156	861,019	1,776,598	1,187,968	8,470,273	3,654,054	79,336,012	1,008,686
Rhode Island	9,661	46	3,523	21,460	10,601	17,211	14,121	65,680	383,170	1,007,103	67,171
So. Carolina	60,660	67,005	24,507	139,881	199,321	118,889	628,193	272,758	25,718	3,196,851	16,018
Tennessee	266,119	173,488	27,340	303,832	452,462	672,117	2,158,169	1,917,268	100,679	17,886,369	98,740
Texas	806,099	132,581	90,603	606,717	3,387,967	2,411,887	1,954,948	6,928,129	129,680	13,910,396	58,466
Utah	33,131	2,898	3,968	32,768	58,680	233,121	17,198	973,246	15,526	1,052.903	126,727
Vermont	75,215	283	18,868	217,033	167,204	439,870	76,384	2,555,113	652,655	25,240,826	1,545,789
Virginia	218,838	33,598	54,709	243,061	388,414	497,289	956,451	1,836,673	122,446	11,470,923	85,535
Washing'n T.	45,818	626	3,821	27,622	103,111	292.883	46,828	1,389,123	22,670	1,356,103	109,200
W. Virginia	126,143	6,226	12,643	156,956	288,845	674,769	510,613	2,681,444	75,027	9,309,517	100,300
Wisconsin	352,428	7,136	28,762	478,374	622,005	1,336,807	1,128,825	7,016,491	2,515,697	33,353,045	2,281,411
Wyoming	11,975	671	718	3,730	273,625	140,225	567	691,650	7,534	105,643	2,930
Total	10,357,981	1,812,932	993,970	12,443,593	22,488,590	35,191,656	47,683,951	155,684,834	529,979,992	777,215,597	27,257,989

ing only the farm-kept sheep shorn that year. After these exceptions, the total numbers stand thus:

Swine	47,683,951	Horses	10,357,981
Neat Cattle*	35,926,153	Mules and Asses	1,812,932
Sheep	35,191,656	**Total**	**130,972,673**

* The Neat Cattle comprise Cows, 12,443,593; Working Oxen, 993,970; Other Cattle, 22,488,590.

It will be noted that there are about the same number of Sheep as of Neat Cattle which include Cows, working Oxen, fattening Bullocks and Young Cattle.—Also that there are nearly twice as many Mules and Asses as there are of working Oxen, and nearly eleven times as many Horses. The Horses used in carts, carriages, under the saddle, etc., in cities and villages, would largely swell the number of Horses, if enumerated.—The percentage of increase between 1870 and 1880 shows that Horses increased 45 per cent; Mules and Asses, 61 per cent; Milch Cows, 39 per cent; working Oxen *decreased* 25 per cent; other cattle increased 66 per cent; Sheep, 24 per cent; and Swine, 99 per cent. In this period the human population increased 30 per cent; and there was an increase of 131 per cent in the product of Indian Corn, which is so largely used in sustaining or fatteiing Swine, heef Cattle, working Horses and Oxen.

Number of Animals, by States and Territories, in 1880.

Making the exceptions above noted (of animals not used by farmers, of those on ranches, and of unshorn spring Lambs), we have the following table:

Ohio.....10,681,964	Indiana....6,283,908	Kentucky..4,558,089
Iowa..... 9,938,457	California..5,686,059	Michigan...4,428,952
Illinois... 9,738,021	New York 5,422,082	Wisconsin.3,954,337
Missouri.. 8,905,156	Pennsyl'a..5,251,304	Georgia. ..3,139,101

About sixty per cent of all farm animals, or nearly seventy-eight millions (77,976,436), were found in the above 12 out of 47 States and Territories.

In Farm Horses, Illinois leads off with over a Million; Texas has over Eight Hundred Thousand; Iowa nearly as many; Ohio nearly Three-quarters of a Million; Missouri with Two-thirds of a Million; New York and Indiana about Six Hundred Thousand each; Pennsylvania over Half a Million; Kansas a little under; Michigan, Kentucky and Wisconsin over One-third of a Million each.

Of Mules and Asses, Missouri has 192,027, followed in order by Tennessee, Texas, Georgia, Mississippi, Illinois, Alabama, and Kentucky, each of these States having over 100,000—Georgia and Texas being about equal. The Empire State has only 5,072 of these useful animals; the Keystone State quadruples this, and Kansas has already accumulated 64,869. Arkansas, N. Carolina, Louisiana, S. Carolina, and Indiana, each have over 50,000.

Of Working Oxen, Texas leads with 90,603, followed in order of numbers by Alabama, Virginia, Mississippi, N. Carolina, and Georgia, each having over 50,000; then by Maine, Louisiana, Michigan, and New York, with 50,000 to 40,000; by Minnesota, Kentucky, N. Hampshire, Wisconsin, Connecticut, Tennessee, and Arkansas, with 36,344 to 25,444 each.

Milch Cows.—New York leads off far ahead, scoring 1,437,855; the nearest approach being Illinois, with 865,913; Iowa and Pennsylvania nearly as many. Next in order, with over Half a Million Milch Cows each, are Ohio, Missouri, and Texas.—Between Five and Four Hundred Thousand, we have in order, Indiana, Wisconsin, and Kansas; in the Three Hundred Thousands, Michigan, Georgia, Tennessee, and Kentucky, while Minnesota, Alabama, and Mississippi have above a Quarter of a Million each. The larger table above shows the number in other States, some of the smaller ones, like New Jersey, Connecticut, etc., having a large number, in proportion to the area of land.

Of other Cattle, that is, growing and fattening steers and young animals, Texas stands far ahead of all others, with 3,387,967, from which we drop to Iowa, having 1,755,343; next to Illinois, with 1,515,063; then to Missouri, with 1,410,507; Ohio and Kansas each have above a Million; New York 862,233; Pennsylvania 861,019. (These eight States contain over half of all the Milch Cows, and of "other cattle," and over half of *all* the neat cattle in the 47 States and Territories.) Next follow Wisconsin, Nebraska, Georgia, and Kentucky, each having above Half a Million. In the Four Hundred Thousands, we have in order of numbers Michigan, Tennessee, California, Arkansas, Florida and Alabama. In the Three Hundred Thousands, are Virginia, Mississippi, North Carolina, Oregon, Minnesota and Colorado. Above a Quarter Million, and just under Three Hundred Thousand, are West Virginia, Louisiana, and Wyoming Territory. Rhode Island has only 10,601; little Delaware, 20,450; and New Jersey nearly 70,000.

Of Shorn Sheep, Ohio leads with nearly Five Millions, followed by California, with over Four Millions; Texas, Michigan, and New Mexico, with over Two Millions; Pennsylvania, with over One and Three-quarter Million. These five States and one Territory have more Sheep than all the other 41 States and Territories. New York comes next with 1,715,180.—Six other States run above One Million each, viz., Missouri, Wisconsin, Indiana, Oregon, Illinois, and Kentucky.—Five States have over Half a Million, viz., Colorado, West Virginia, Tennessee, Maine, and Georgia—Kansas, Virginia, Iowa, North Carolina, and Vermont, are nearly up to Half a Million. Seven others exceed 200,000.

Of Swine, Iowa leads with over Six Millions; Illinois follows with over Five Millions; Missouri with over Four and a Half Millions; Indiana and Ohio with over Three Millions each; Kentucky and Tennessee, with over Two Millions each; and Texas nearly Two Millions. These eight States contain very nearly three-fifths, or 60 per cent, of all the Swine in the United States. Kansas has 1,787,969; Arkansas over, and Georgia and North Carolina nearly One and a Half Million; Alahama and Nebraska about One and a Quarter Million; Pennsylvania nearly as many; while Mississippi and Wisconsin have over a Million each; Michigan and Virginia nearly reach a Million; New York has Three-quarters of a Million; Louisiana, South Carolina, and California, over Six Hundred Thousand; West Virginia over Half a Million. Nebraska, during ten years, increased her Swine 1,989 per cent, Kansas 765 per cent, and Iowa 346 per cent.

The Wool Clip of 1880.—Ohio leads with nearly one-sixth of the whole product of the United States, followed in order by California, Michigan, New York, Pennsylvania, and Missouri. These 6 States produced from 7,300,000 to 25,000,000 pounds each, and together more than all the other 41 States and Territories, excluding Ranch products.

STATES PRODUCING NEAR 1,000,000 LBS. WOOL & UPWARD.

Ohio..25,003,756	Texas..6,928,129	Iowa..2,971,975
Cal...16,798,036	Ind. ..6,167,498	Kans..2,855,832
Mich..11,858,497	Ill. 6,093,066	Maine.2,776,407
N.Y.. 8,827,195	Ore'n.5,718,524	W. Va.2,681,444
Penn. 8,470,273	Ky. 4,592,576	Ver't. 2,555,113
Mo... 7,313,924	N. Mx.4,019,188	Tenn..1,917,268
Wis.. 7,016,491	Col'a..3,197,391	Vir'a..1,836,673
		Wa. T.1,389,128
		Minn..1,352,124
		Geo...1,289,560
		Neb...1,282,656
		N. H..1,060,589
		Mont . 995,484
		Utah. ..973,246

Wool Grown, Imported, and Used.

The interesting figures below show the great progress in wool growing in the United States within 30 years; also the amount imported and exported and consumed in our own manufactures in each of the last 20 years. The figures are prepared for the *American Agriculturist* from Congressional Documents. (The first column gives more than Table *B*, as it includes the Sheep on ranches, etc.)

Year.	*Raised. Pounds.*	*Import'd Pounds.*	*Exported. Pounds*	*Used Here. Pounds.*
1850	52,516,959	18,695,294	35,898	71,176,355
1862	90,000,000	42,131,061	1,486,341	130,644,720
1863	106,000,000	73,934,944	1,064,572	178,867,372
1864	123,000,000	90,464,002	378,957	213,085,045
1865	142,000,000	43,840,154	1,145,463	184,694,691
1866	155,000,000	76,532,274	1,824,720	229,707,554
1867	160,000,000	16,558,046	926,005	175,632,041
1868	168,000,000	24,124,803	3,360,287	188,764,516
1869	180,000,000	39,275,926	786,804	218,489,122
1870	162,000,000	49,230,199	1,862,945	209,367,254
1871	160,000,000	68,058,028	1,330,506	226,727,522
1872	150,000,000	122,256,499	2,406,908	269,849,591
1873	158,000,000	85,496.049	7,115,515	236,380,534
1874	170,000,000	42,939,541	7,135,757	205,808,784
1875	181,000,000	54,901,760	3,745,661	232,156,099
1876	192,000,000	44,642,836	1,623,194	235,019,642
1877	200,000,000	42,171,192	3,168,556	239,002,636
1878	208,250,000	48,449,079	6,300,075	249,149,004
1879	211,000,000	39,005,155	4,165,400	245,839,755
1880	232,500,000	128,131,747	3,840,071	356,791,676
1881	264,000,000	55,964,236	5,578,989	314,385,247

The home production increased in ten years (1871 to 1881) from 160 to 264 millions lbs., or over sixty per cent, while the total population increased only 30 per cent, from about 38½ to 50 millions. The average home consumption of wool for the whole population in 1871, was 5 lbs. 14 ounces, and in 1881 it rose to 6 lbs. 3½ ounces, an increase of 6¾ per cent. In 1880, however, the home consumption was 7 lbs. and 1⅕ ounces per head, of which 36 per cent was imported wool. The smallest wool crop in 15 years past occurred in 1872; while last year's clip was 32¾ million pounds in excess of any previous year. The lightest consumption was in 1873, following the light clip of 1872. A comparison of the various figures for different years, will afford the reader several interesting deductions.

The Leading Grain States.

The interesting grouping and comparisons of the States, and other items, have been specially prepared for the *American Agriculturist*, with much labor, from various official reports for the year 1880. The data are from the crop of 1879. The rapid development of Kansas and Nebraska, Dakota, Northwestern Minnesota, and of the Pacific Coast, has already changed the relative position in some instances; but these are the only complete figures that will be available for ten years to come—until the Census for 1890; and they will serve for general reference.—We first give the totals for all the States and Territories, and the average per acre in bushels—carrying the figures out to two decimals:

TOTAL ACREAGE AND YIELD IN BUSHELS.

Total in U. S.	*Bushels.*	*Acres.*	*Average Per Acre.*
Corn	1,754,861,535	62,368,869	27.01
Wheat	459,479,505	35,430,052	12.97
Oats	407,858,999	16,144,593	25.26
Barley	44,113,495	1,997,717	22.08
Rye	19,831,595	1,842,303	17.76
Buckwheat	11,817,327	848,389	13.09
Total	2,697,962,456	118,631,923	22.75

Leading Wheat States.—The following 14 States were credited with over 10,000,000 bushels each, and with an aggregate of 398,144,457 bushels, this being 86½ per cent, or nearly seven-eighths of the Wheat crop of the entire country. ☞The first 6 States had 245,698,002 bushels, or over half (53½ per cent) of the total crop, or about 32,000,000 bushels more than all the other 41 States and Territories. The great differences in the yield per acre in the different States is noteworthy—from 9¼ in some States to 19½ bushels in Michigan!

Wheat States.	*Bushels.*	*Acres.*	*Average Per Acre.*
1—Illinois	51,110,502	3,218,542	15.89
2—Indiana	47,284,853	2,619,695	18.05
3—Ohio	46,014,869	2,556,134	18.00
4—Michigan	35,532,543	1,822,749	19.60
5—Minnesota	34,601,030	3,044,670	11.36
6—Iowa	31,154,205	3,049,288	10.22
7—California	29,017,707	1,832,429	15.84
8—Missouri	24,966,627	2,074,394	12.04
9—Wisconsin	24,884,689	2,298,513	10.83
10—Pennsylvania	19,462,405	1,445,384	13.60
11—Kansas	17,324,141	1,861,402	9.31
12—Nebraska	13,847,007	1,469,865	9.42
13—New York	11,587,766	736,611	15.61
14—Kentucky	11,356,113	1,160,108	9.79

Leading Indian Corn States.—The three States of Illinois, Indiana and Missouri, are credited with 803,302,451 bushels, or nearly half (45.8 per cent) of the crop of the entire country, and the first named 10 States produced nearly four-fifths (78.8 per cent) of the whole.—A remarkable range is the product per acre—from 8.81 in Florida, and 9 in South Carolina, up to 41½ in Iowa.—Massachusetts and Connecticut are alike in yield per acre, and Vermont and New Hampshire are nearly so.

Indian Corn States.	*Bushels.*	*Acres.*	*Average Per Acre.*
1—Illnois	325,792,481	9,019,381	36.13
2—Iowa	275,024,247	6,616,144	41.57
3—Missouri	202,485,723	5,588,265	36.23
4—Indiana	115,482,300	3,678,420	31.39
5—Ohio	111,877,124	3,281,923	34.08
6—Kansas	105,729,325	3,417,817	30.93
7—Kentucky	72,852,263	3,021,176	24.11
8—Nebraska	65,450,135	1,630,660	40.14
9—Tennessee	62,764,429	2,904,873	21.61
10—Pennsylvania	45,821,531	1,373,270	33.37
11—Wisconsin	33,230,579	1,015,293	33.71
12—Michigan	32,461,452	919,792	35.29
13—Virginia	29,106,661	1,767,567	16.46
14—Texas	29,065,172	2,468,587	11.77
15—North Carolina	28,019,839	2,305,419	12.15
16—New York	25,875,480	779,272	33.20
17—Alabama	25,451,278	2,055,929	12.38
18—Arkansas	24,156,417	1,298,310	18.61
19—Georgia,	23,202,018	2 538,733	9.14
20—Mississippi	21,340,800	1,570,550	13.59
21—Maryland	15,968,533	664,928	24.01
22—Minnesota	14,831 741	438,737	31.81
23—West Virginia	14,090,609	565,785	24.90
24—South Carolina	11,767,099	1,303,404	9.03
25—New Jersey	11,150,707	344,555	32.07
26—Louisiana	9,906,189	742,728	13.34
27—Delaware	3,894,264	202,120	19.27
28—Florida	3,174,234	360,294	8.81
29—Vermont	2,014,271	55,249	36.46
30—Dakota	2,000,864	90,852	22.02
31—California	1,993,325	71,781	27.77
32—Connecticut	1,880,421	55,796	33.70
33—Massachusetts	1,797,593	53,344	33.70
34—New Hampshire	1,350,248	36,612	36.88

Leading Oats Growing States.—The revised official figures very slightly change our summary given in May. Illinois leads here again. The following 22 States yield over 3,000,000 bushels each. The first *five* yield 28,000,000 more than all the other 42 States and Territories; and the first ten about four-fifths of the entire crop. The average yield per acre varies from less than 10 bushels to over 37 in Vermont, Minnesota coming next.

Oats States.	*Bushels.*	*Acres.*	*Average Per Acre.*
1—Illinois	63,289,200	1,959,889	32.29
2—Iowa	50,610,591	1,507,577	33.57
3—New York	37,575,506	1,261,171	29.80
4—Pennsylvania	33,841,439	1,237,593	27.36
5—Wisconsin	32,905,320	955,597	34.43
6—Ohio	28,664,505	910,388	31.48
7—Minnesota	23,382,158	617,469	37.86
8—Missouri	20,670,958	968,473	21.34
9—Michigan	18,190,793	536,187	33.93
10—Indiana	15,599,518	623,531	25.02
11—Kansas	8,180,385	435,859	18.77
12—Nebraska	6,555,875	250,457	26.18
13—Georgia	5,548,743	612,778	9.06
14—Virginia	5,333,181	563,443	9.47
15—Texas	4,893,359	238,010	20.56
16—Tennessee	4,722,190	468,566	10.08
17—Kentucky	4,580,738	403,416	11.35
18—Oregon	4,385,650	151,624	28.92
19—North Carolina	3,838,068	500,415	76.69
20—Vermont	3,742,282	99,548	37.51
21—New Jersey	3,710,573	137,422	27.00
22—Alabama	3,039,639	324,628	9.36

Leading Rye Growing States.—Only one bushel of Rye is grown for 23 bushels of Wheat; the total Census crop of Rye was under 20,000,000 bushels.—We would expect this to be a prominent crop in the New England States, where "Rye and Indian bread" is popularly supposed to be a leading food; but the six New England States produced only 730,255 bushels, or less than one-fifth of the crop of Pennsylvania, Connecticut yielding over half of this (370,733). Only eight States raised 500,000 bushels each, and Nebraska nearly that.—The first three States give nearly half the entire crop, and the eight nearly four-fifths of all (78 per cent).—The yield per acre varies from 8 bushels in New Jersey and Kentucky, to 16¼ in Illinois.

Rye States.	*Bushels.*	*Acres.*	*Average Per Acre.*
1—Pennsylvania	3,683,621	348,465	10,57
2—Illinois	3,121,785	192,138	16.25
3—New York	2,634,690	244,923	10.76
4—Wisconsin	2,298,513	169,692	13.56
5—Iowa	1,518.605	102,607	14.80
6—New Jersey	949,064	106,025	8.00
7—Kentucky	668.050	84,417	7.92
8—Missouri	535,426	46,481	11.52

Leading Barley States.—California leads far ahead. The first four States raised two-thirds of all the Barley grown in the country. The yield per acre varies all the way from 15 to 31 bushels.

Barley States.	*Bushels.*	*Acres.*	*Average Per Acre.*
1—California	12,579,561	586,340	21.45
2—New York	7,792,062	356,629	21.85
3—Wisconsin	5,043.118	204,335	24.68
4—Iowa	4.022.588	198,861	20.23
5—Minnesota	2,992,965	116.020	25.88
6—Nebraska	1,744.686	115,201	15.15
7—Ohio	1,707,129	57,482	29.72
8—Illinois	1,229,523	55,267	22.25
9—Michigan	1,204,316	54.506	22.10
10—Oregon	920,977	29,311	31.42

Leading Buckwheat States.—New York with 4,461,200 bushels, and Pennsylvania with 3,593,326 bushels, produce about 70 per cent of all this crop that is grown. New Jersey, with 466,414 bushels, and Michigan, with 416,662 bushels, yield the largest in other States. New York averages over 15 bushels per acre, and Pennsylvania over 19.

Birds and the Potato Beetle.—The number of birds known to feed upon the Colorado Beetle is so few, that every addition to the list is interesting. DeCost Smith, Esq., Onondago Co., N. Y., writes us, that in dissecting a Wood, or Long Thrush (*Turdus mustelinus*,) he discovered in the stomach several Potato Bugs (*Doryphora*, 10-*lineata*,) one of them being entire. Mr. S. thinks that the Oriole, or Golden Robin, also feeds upon the insect, though he has not, as with the Thrush, conclusive proof. The Crow, thus far, is the most useful bird to the potato grower, though it is the most unkindly treated of all, and considered an enemy in almost all parts of the country.

Painting Houses.

BY E. E. REXFORD, SHIOCTON, WIS.

In going through the country, the eye is wearied by the steady succession of white houses, usually with green blinds aud red chimneys. Why we see so few houses of other colors, I am unable to say. Perhaps white is adhered to from force of habit. A house so dazzling in its whiteness that it could be seen from anywhere within a goodly circle of miles, like a white spot in a greeu map, was our fathers' highest idea of beauty. We became used to seeing wbat they thought was particularly fine, and when we came to build houses of our own, we quite naturally did as our fathers did. The consequence is that white houses glare at us everywhere we go. If they are toned dowu with trees and vines, the effect is not so bad, but I can conceive of no more self-asserting and disagreeable feature in a landscape than a great white house, stauding in an open yard, unless it is a *red* oue. In summer the contrast between a white house and the landscape is too strong. In winter there is none.

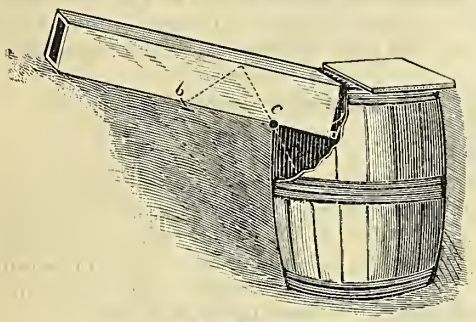
Before painting a house, we should study the landscape about it, aud decide on a color that will be in harmony with it. We do not want a green house. I do not mean that when I say we should select a color in harmony, but I mean a color that is in contrast with the prevailing tints of the landscape, and does not conflict with them. There is no reason why two harmonizing colors should not be in complete contrast with each other. A great many people get the idea that harmony of color means similarity, and that contrast means conflict. This is not the case. Drab and blue contrast strongly with each otber, but there is complete harmony between them.

For country houses I would advise for open, exposed places, a pale gray, or drab. There are complaints made frequently that drab looks cold. It can not look colder than white does, and there is no reason why it should look cold at all, if proper care is taken to have the trimmings of the house of some warm, cheerful color. I know a drab house with deep, warm-toned brown cornice and blinds, with plenty of vines clambering up it to break the monotony of the surface between the windows, and it is one of the warmest-looking houses I know of. In the summer it is refreshing to look at it. It does not pain the eyes with its glare. It does not assert itself the moment you reach the top of tbe hill and come within sight of it. A white house would draw your attention at once; and no matter how you might try to look at something else, the white blotch on the landscape would leave its impression in your eye, and you could not help seeing it. This gray house seems part of the landscape. Its colors blend well with the green about it. There are no large trees around it, but there are vines, and the general effect in summer is cool and subdued, and in winter it gives a sense of warmth and comfort. Why it gives a sensation of warmth at one season and of coolness at another, is explained by the fact that summer is a season of high, bright colors, and the drab is in a lower tone of color than those prevailing in the landscape. Winter is a season of but little color, and then drab, in contrast with the snow-covered earth, becomes cheerful, aud the deep-toned trimmings, which should be seen on every house painted in drabs or grays, give a sense of warmth which they would not have in summer when all about it is in high, decided tones.

I am glad that we see fewer new houses painted white now than formerly. The taste of the people is being educated to a more correct knowledge of what is fitting and appropriate. In time to come we shall see few white houses, and no bright red barns to give us a sense of intense heat and consequent bodily discomfort on a summer day, when we are tryiug to keep cool.

A Rabbit Trap.

Mr. S. R. McConn, Bates Co., Mo., sends us a sketch and description of an excellent rabbit trap. He writes: Rabbits are a great nuisance here, both in the garden and orchard, and a trap of the following kind put in a blackberry patch, or some place where they like to hide, will thin them out wonderfully. A common salt barrel, with a notch sawed out at top, is set in the ground level with the



A GOOD RABBIT TRAP.

top. There is an entrance box, four feet long, with side pieces seven inches wide—top and bottom four and a half or five inches. The bottom board is cut in two at *b*, and is somewhat narrower than in front, that it may tilt easily on a pivot at *c*. A small washer should be placed on each side of the trap at *c*, that it may not bind in tilting. The distance from *b* to *c* should be somewhat longer than from *c* to *d*, that the board will fall back in place after being tipped. No bait is required, because a rabbit (hare) is always looking for a place of security. The bottom of the box should be even with the top of the ground at the entrance to the top of the barrel. The barrel should be covered closely with a board, as shown in the engraving. Remove the rabbits from the trap as fast as they are caught.

Brood-Sow Pens.

BY A. D. FIELD, WARREN CO., IOWA.

The accompanying figures represent a convenient arrangement for brood sows. The

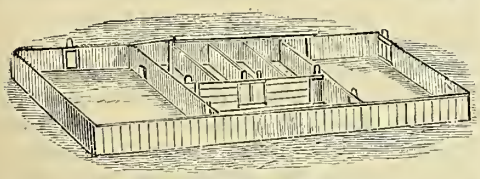


Fig. 1.—PLAN OF CHEAP PIG-PEN.

pens are not equal to the costly piggeries of wealthy breeders, but they answer a good purpose here, in a new country, where we are obliged to get along cheaply. Many of my neighbors who have built expensive houses say my pens answer a better purpose than theirs. First, there is a tightly-boarded pen (except in front), 16 by 12 feet. This is divided into four nests, 12 by 4 feet. A shed roof extends 8 feet from the rear. The tops of the nests are covered with boards, and the space between this room and the roof is filled with straw, making it wind-tight, except in front. When young pigs are expected during the cold weather of winter, I hang a gunny sack in front of the nest. The doors, figure 2, are the most convenient of any I have tried. The board door is slipped in from the top, between pairs of cross-boards in the pig-pen.

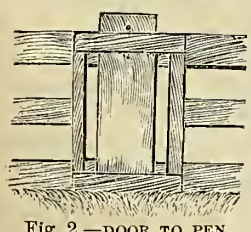


Fig. 2.—DOOR TO PEN.

Seeding Down With and Upon Root-Crops.

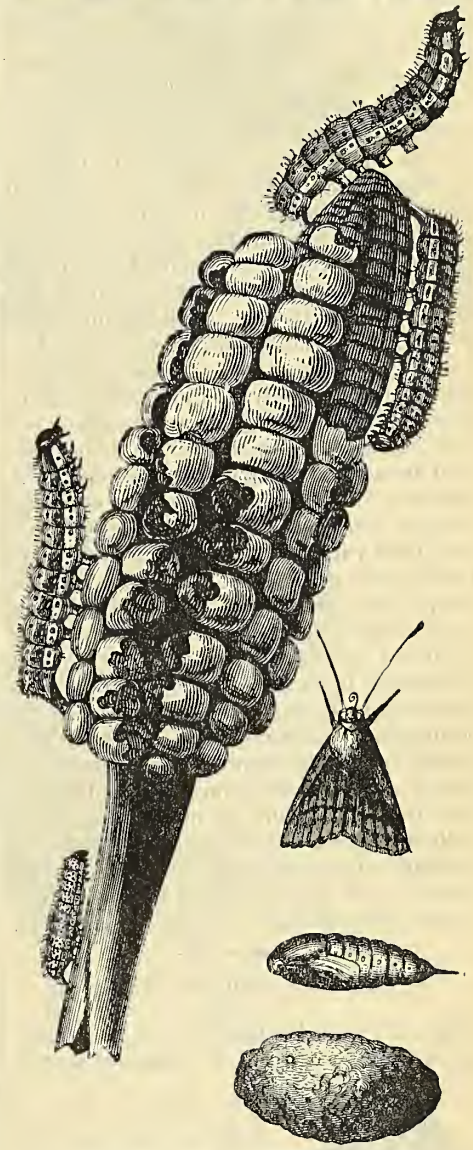
Farmers so habitually follow in the time-honored ruts of their fathers, that they do not take kindly to innovations of any sort. Seeding to grass with root-crops, however new to our old-fashioned round-about practice, is nevertheless a very good plan. Sowing grass-seed with grain of any kind is unphilosophical, inasmuch as grass and grain, being plants of the same natural family, make similar drafts upon the soil. Root-crops draw different elements from the soil—at least in widely different proportions—so that clover and the grasses follow naturally in the rotation.

Land ought not to be laid down under any circumstances unless it is in condition to carry a grass crop several years. For this, as is well known, the soil should abound in residuary manure—that is, in manure which other crops have failed to take, aud which is therefore left as an accumulatiou of fertility in the soil. We can not ordinarily plan so as not to have considerable residuary manure left after every mauured crop; so we put grass at the end of the rotation, to occupy the soil so long as it makes good returns.

To seed down with turnips sowed broadcast, the turnip-seed may be mixed with timothy and clover, and thus sowed very evenly—at all events, much more evenly than if sowed by itself. When seeding with red-top, orchard grass, or any of the light-seeded grasses, it will not do to mix the seed, for, in casting, the heavy turnip-seed would go much further. To seed down upon root-crops in drills, the grass-seed is not sowed until the roots are well established, and have been once or twice hoed. This will have levelled down the ridges to nearly a flat surface. The grass-seed is sowed broadcast just after the last hoeing and raked in, or just before the last hoeing, which will sufficiently disturb the surface to secure the covering of the seed. In the spring it will do very well to trust to rains beating grass-seed into the soil, but in mid-summer this is an unsafe reliance. After pulling the roots, the field should be well rolled, so as to give it an even surface for future convenience.

The Corn Worm.

About the time the field-corn reaches the "roasting-ear" state, and earlier with sweet-corn, there arrive by mail and by other means, numerous ears of corn with sad complaints of the worm, which we shall find within the ear. This caterpillar (*Heliothis armigera*,) to many known as the "Corn-worm," is the same insect that troubles the cotton grower by attacking the forming seed vessel, and is known to him as the "Boll-worm." Not only does it feed to a destructive extent upon these widely unlike plants, but in some of the Western States, it is the worst enemy with which the tomato-grower has to contend; it is also destructive to green peas, and has been known to attack young pumpkins. String-beans, lucerne, hemp and tobacco, are other plants it has been known to eat. It also visits the flower garden for a feast upon the buds of the gladiolus. Its geographical range is in keeping with its great variety of food, it being reported as occurring in the Isle of Wight, in Australia, and in Japan. Though it is most generally noticed when it attacks the corn in the ear, it is now known that in some places, at least, an earlier brood feeds upon the staminate flowers, or "tassel," eating through the leaves that surround it, in order to get at the



THE CORN WORM (*Heliothis armigera*).

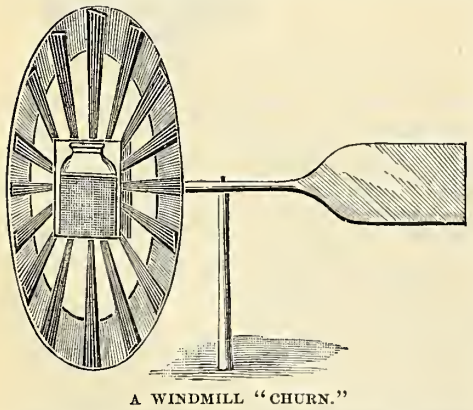
tassel before it is developed. The engraving represents the caterpillar of different ages. It is so variable in color, one might suppose there were several species, as the individuals are all the way from light-green to dark-brown. In all, however, the body is marked with alternate light and dark lines, with numerous black spots from which soft hairs are produced. When full-grown, the caterpillar enters the earth, and there forms a cocoon of silk, intermingled with earth, and assumes the pupa state. In three or four weeks, the perfect insect appears as a moth of variable color, but generally of a pale clay-yellow, with a faint greenish tint, with pale olive and brownish markings. The different stages of the insect are shown in the engraving; below, at the right hand is the cocoon, the pupa next above, and then the moth, all of the real size.

The moth deposits her eggs upon the "silk" of the corn, and the young caterpillars make their way beneath the husks to the growing kernels where they riot and make sad work;

their presence is usually indicated by a premature drying of the silk. They are more numerous in some years than in others, but upon the whole are apparently increasing, at least in the Eastern States. In Kansas, in 1860, the corn crop was so much injured by this worm, that in some counties the yield was only about one-eighth of the usual amount, and this of inferior quality. As the presence of this insect is not suspected until the mischief has been accomplished, no remedy can be applied when the enemy is discovered. When the young worm has entered the ear it is safe; even were its presence known, the husks prevent the direct application of anything to destroy it, and all remedies must be of a preventive character. That which, from experience in the cotton fields, seems to promise the best results, is to trap the moth at night by means of a light. We mentioned not long ago the traps for the May-Bug, and similar lamp-traps have been invented for catching this, and especially the moth of the Cotton Worm (*Aletia*). These are much alike in principle; a lamp with or without a lantern, is placed in a broad shallow pan which holds some destructive liquid. Water with a little kerosene floating upon the surface, has been found the most effective. Some have used attractive liquids without the lamp. A mixture of molasses and vinegar, or of molasses and beer, without and with arsenic, has been tried with some success, but inferior to that attending the use of the lamp. To be of service, traps should be set very early, before the corn shows any sign of tassel or ear. If it should prove that in all cases the first brood feeds upon the undeveloped tassel, attention must be directed to this brood. Experiments are needed to determine what proportion of the staminate flowers may be removed, and yet leave enough to furnish sufficient pollen to fertilize all of the ears. That ordinarily a great excess of pollen is produced, is evident, but until we know how great this excess is, the destruction of the first brood by removing the tassel can not be practised.

Churning with the Wind.

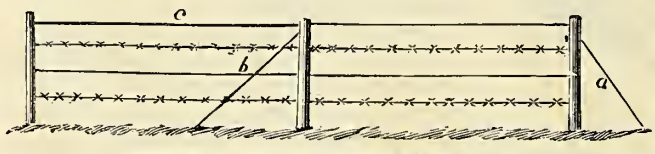
Dr. G. P. Hachenberg, Travis Co., Texas, has a "churn" which he describes as follows: "I place the cream in a large glass, air-tight jar, about two-thirds full, and adjust the jar in line of the axis of a windmill, swung low to the ground, as shown in the engraving herewith. The jar is placed inside of a box, which keeps the cream cool, as well as in its proper place. In very hot weather, ice wrapped in woollen cloth may be placed within the box, around the jar. As the windmill revolves, the jar turns with its axis, thus keeping up an agitation of the cream until the churning is effected. A convenient method to churn by this process, is to put the cream in the jar in the evening, and remove the butter in the morning. The butter is not only made, but thoroughly worked, and taken out in a fine, firm ball. We might call this the tumbling process."



A WINDMILL "CHURN."

Wire Fences, and Bracing Them.

A good fence on the farm is of the greatest importance, and suggestions as to the best kinds, and the building of them, are valuable. There are but few sections of our country where any fence can be erected so cheaply as the common barbed wire fence, now being used so extensively throughout the Western States. A wire fence, properly put up, is as effectual in turning stock, which has become accustomed to it, as a stone wall or a board fence; and although an animal may be occasionally injured, there is on the whole but little danger to be apprehended in using it.



METHODS OF BRACING WIRE FENCE POSTS.

Four wires, all barbed, are generally used. The fence could be made much cheaper, and nearly or quite as effective, by using two strands of common wire in connection with two barbed wires, placing them alternately, a barbed wire at the bottom, about one foot from the ground for cattle, and closer for sheep. To turn horses and cattle, it is well to fasten a strip of lath, whitewashed or painted white, to the top wire. This aids the stock in determining the proximity to a fence in the dusk, when, without this, they might run into it and be injured.

The most essential thing to observe in building a wire fence is the bracing of the end-posts. They are usually braced from the inside, which I think is a mistake, as the wires always have a tendency to lift the posts from the ground, and thereby become slack. A far better way is as follows: Take a $^3/_8$-inch rod and bolt one end through the post, between the uppermost two wires, shown at *a* in the engraving, and fasten the other end of the rod to a large stone or log, sunk three or four feet below the surface on the outside of the post. When it is desirable to drive nearer the end post than the brace will allow, the second post may be braced, *b*, and the support carried to the end-post by means of a piece of scantling, *c*. Braced in this manner, the wires have a tendency to pull down the end-posts instead of lifting them; and when the work is properly done, a fence will remain in place, and be of service until two-thirds of the posts have rotted off. A stretcher is not only convenient but necessary in facilitating the construction of a well-built wire fence.

F. H. McFARLAND, Dallas Co., Iowa.

The Root Crop.—The active growth of the root crop takes place late in the season, and in this respect it differs materially from the cereals. The grains begin to "shoot" in early spring, and conclude growing before midsummer arrives. During the hot weather, the nitrates are formed in the greatest abundance by the chemical process called nitrification. These compounds are very soluble, and if no crop is on the soil, they are washed out to a large extent by the rains. The roots—Turnips, Swedes, Mangolds, etc., take up these compounds of nitrogen, and use them in growth. In this way they are not only saved, but become an important element of the food of animals. After passing through and serving the farm stock, they are in large part returned to the land, to feed succeeding crops. The root crop does not grow to itself alone, and therefore should be a part of a rotation, where fertility of the soil is to be kept up, and good crops raised at the same time.

Attractive Country Roads.

BY EBEN E. REXFORD.

At the West we rarely see a country road that has much attractiveness about it, save in the newly-settled portions, where men have not had time to commit the wholesale sacrilege of destroying every tree and shrub. There is no reason why our roads should not be made as pleasant as our farms. They can be, at little expense. Leave the work of beautifying them to Nature. Every year she makes an effort to do what man fights against persistently. Trees start up along the fences, and shrubs take shelter behind old logs, and stones, and stumps, and make an effort to obtain a foothold there. If these could be left to grow, it would not be long before a now bare and cheerless strip of road would become a pleasant thing to see. In travelling over it, a constant succession of delightful views would be afforded, and the eye and the mind would enjoy the variety.

I wish I could prevail on every road-master to leave a tree here and there, to grow, in a few years, into a beauty and a blessing. Let them make nooks by the wayside, where weary travellers can pause beneath the shade on summer days, and rest. Let shrubs grow by the rocks and in the fence corners. I do not mean that they should allow *every* bush to grow, until the road-side becomes a thicket, but that a few of the many Nature has planted should be left to help break up the monotony of the highway. At the West most roads are straight, and consequently lack the charm of angle and curve, which characterizes the roads among the Eastern hills. The only way in which the monotony of these straight, level roads, can be overcome, is by breaking up the sameness, by allowing trees to grow, and encouraging Nature in her efforts to reclaim the landscape that has been wrested from her control. We lose sight of the beautiful in our efforts to "get ahead." They understand these things better in the Old World, where nothing is more beautiful and picturesque than bits of road-side scenery, usually bordered by hedges.

The main object of a road is, of course, its usefulness, and a road cannot be too good. But usefulness and beauty can be made to go hand in hand. In making a road ornamental, it by no means follows that we neglect the practical questions of how it can best be made to serve the purposes of travel. As a general thing, our roads are much too wide; they should be only wide enough to allow vehicles to pass. Ordinarily, there are two beaten tracks, with wide spaces between these and the fences, to grow up to weeds.

Sorrel.—Sheep's Sorrel.

From the number of specimens that have recently been sent us, it is evident that every one does not know that very common weed, generally, but incorrectly, called "Sorrel." The true Sorrel, of which there are several species, is very different from this, and may be readily distinguished by having a three-parted leaf, like that of clover. The proper name for the weed usually called "Sorrel" is Sheep's Sorrel (*Rumex acetosella*). It belongs to the same genus with the very much larger Docks. That it may be recognized, we give above an engraving of a rather diminutive plant. Its size is much affected by the character of the soil, as it grows from 2 inches high in poor soil to 20 in rich. The plant, especially in poor soil, is often reddish throughout, and where abundant, is conspicuous on that account. The lance-shaped leaves have at the base two spreading lobes, or, as the botanists say, are *hastate*, or at least the lower ones are thus shaped, and on long petioles, while the upper are sessile, and often without lobes. The flowers are in long slender racemes, the staminate, or male, and the pistillate, or female, in different plants; both kinds are very small, but the male (*a*) flowers are the largest. The female (*b*) are succeeded by a small brownish seed-like, three-cornered fruit (*c*). The leaves have an acid taste, like those of the true Sorrel. The plant is perennial, and has a creeping, much-branched root-stock, by which it spreads and takes possession of the soil. Sheep's Sorrel, though a native of Europe, is not mentioned in agricultural works as being a troublesome weed abroad. It is often the case with introduced plants, that they find here conditions favorable to their rapid increase, and acquire a reputation which they do not have at home. It is a common notion that lime is the proper antidote for this "Sorrel." The reason given is: lime, being an alkali, neutralizes the acid in the soil, and the plant being deprived of its acid, cannot grow. This sounds very "scientific," but it is not correct. Sheep's Sorrel no more derives its sourness from the acid in the soil, than does the sugar-beet get its sweetness from sugar in the soil. In both cases the products, the acid and the sugar, are formed in the plant itself. That lime is a useful aid in destroying the weed, we do not doubt; whatever enriches the ground and encourages the growth of grass and other plants, aids in exterminating weeds. This is not regarded as an especially stubborn weed; it readily gives way before good culture, and its abundance in a field indicates a poor condition of the soil.

SHEEP'S SORREL (*Rumex acetosella*).

A GROUP OF SMALL-FLOWERED LILIES.

Some Small-flowered Lilies.

Those who only know Lilies from the few large and showy kinds usually met with in gardens, would be surprised at the great number and variety that even a moderately full collection presents. Not only do Lilies differ widely in their habit, but in the range of color; they have flowers from the purest white to the most delicate yellow and buff, and the most intense of scarlets, with a vast number of intermediate shades—in fact, almost every color except blue is to be found among them. The range in stature and size of the flower is also great; the stem of the Giant Lily often reaches ten feet, and it is not rare for the flowers of the Golden-banded to exceed a foot in diameter. In marked contrast with these, there are several Lilies not over a foot in hight, and with flowers correspondingly small. If one wishes to take up a specialty in flower culture, there is scarcely any genus that offers so many attractions to the amateur as the Lily, and there is none that gives more satisfactory returns. The success that has attended the efforts of some who have produced new varieties, shows that there is much yet to be done in this direction, especially in the way of producing hybrids. We have been much interested in a number of the small-flowered species which have bloomed with us this summer, most of them for the first time. The Crimson Erect-flowered Lily (*Lilium concolor*, var. *pulchellum*, the central one in the engraving), is from Eastern Siberia; the bulb is scarcely an inch long, and has a stem about a foot high, which is surmounted by usually a single erect flower, though two and sometimes three are borne by strong plants. The flower, an inch and a half to two inches across, is more scarlet than crimson in color, and marked by very minute blackish dots. The Oregon Lily (*L. Columbianum*, at the left-hand), is a native of the Northwest. Strong plants are two feet high, but

ours, from small bulbs, were scarcely over a foot; the lower leaves are four or five in a whorl, but the upper ones are scattered. The flowers, one to three in number, are on slender stalks, which are nodding at the top; they are two inches or less across, with the petals curved strongly backwards from the middle. The color is pale orange-yellow, thickly covered with purple dots, but it varies, some specimens being deep orange. This species has long been known to botanists, who regarded it as a small variety of the eastern wild Yellow Lily (*L. Canadense*), but it was not until Mr. Hanson brought it into cultivation that it was found to have a very different bulb from that species. The Pyrenean Lily (*L. Pyreniacum,*) is two feet or more high, with very narrow leaves, and two to a dozen flowers, which are about two inches across; these are pale yellow, with black dots. The beauty of the flowers is marred by a tinge of green at the base. Some regard this as a yellow-flowered form of the Pompone Lily. It is one of the least showy, but is worthy of a place in a collection. More brilliant than either of the foregoing, and the most beautiful of all the small-flowered species, is the Slender-leaved Lily (*L. tenuifolium*, figured in May, 1878), which should be comprised in every collection of these plants. The bulb of these small Lilies is, in size, in keeping with the rest of the plant, and several may be planted in a medium-sized pot; indeed these more delicate Lilies are well adapted to pot culture, as their beauties are more readily seen than when they are in the border, and the bulbs can be more readily cared for. Those whose horticulture is confined to window gardening, will find the small Lilies of easy culture, and very effective in making a pleasing exhibition.

Monstrosities Among Plants.

Those who observe plants closely will frequently meet with malformations, or departures from the usual structure. These are not confined to any particular part of the plant, but the root, stem, leaves, flowers, and fruit, may each present them. Young people who search for "Four-leaved" or "Five-leaved" Clover, recognize the fact that malformation among leaves is not unusual. One of the simplest of these deviations from the ordinary manner of growth is, for two parts, usually separate, to cohere to one another. This is strikingly seen in what are termed "twin" fruits; "twin" cucumbers, cherries, peaches, and others are of common occurrence. Stems often unite to form a double stem, and we have seen a grape-vine, the tendrils of which, instead of branching in the usual manner, were all simple, on account of the cohesion of the branches to the main tendril. The engraving, about half the real size, is from a shoot cut from our Asparagus bed; the other shoots, from the same root, were of the usual form. In this the stem is flattened, to form a thin, wide band or plate, with little resemblance to an ordinary stalk of Asparagus. The stems of the Sweet-potato sometimes show a similar condition, extending for several feet. This kind of malformation is of such frequent occurrence in both herbs and trees, that botanists have given it a name. Such stems are said to be "fasciated," from the Latin, *fasciatus*, meaning swathed or bandaged. One side of stems of this kind often grows faster than the other, which causes them to twist, and they frequently have a more or less curved or a spiral form. It is supposed that these fasciated stems are formed by the union of the shoots from several buds. The common Thistle often has fasciated stems, and we have seen the flower-head flattened also, until it bore very little resemblance to an ordinary Thistle-head. The tendency to produce such stems is sometimes hereditary, and may be perpetuated by seed. This is notably the case in the garden Cockscomb (*Celosia cristata*), cultivated for its large, usually crimson, head or crest. This, which has been known to reach 18 inches across, is really a monstrosity, a remarkable example of fasciation. In its normal form, Cockscomb shows nothing of the crest, but in its place a cluster of slender, erect flower-stems, much like the Pyramidal Cockscombs. By the union or fasciation of these stems into a dense mass, the head is produced, the surface of which is covered with minute flowers. In this plant the peculiarity is fixed, and is continued with certainty by seed.

ASPARAGUS STEM.

The Worm in the Grape.

What a host of enemies beset the grape vine! Root, stem, bud, leaf, tendril, blossom, fruit, and even the seeds, are each subject to the attacks of one or several insects. These, as a general thing, attack the vine before the fruit is ripe, and if, after all, the fruit matures, the wasps and the birds are ready to claim their share. Notwithstanding all this, we manage to have grapes, and in plenty, so bountiful is the vine, and so abundantly does it repay a little care in protecting it from its enemies. It is within a comparatively few years that the Western vineyardists found they had an insect which served their grapes, much in the same manner that the Codling Moth does the apples; the Caterpillar or "Worm," living within the green fruit, and destroying it. It has on this account been called the "Grape Codling," but is more generally known as the Grape-berry Moth.

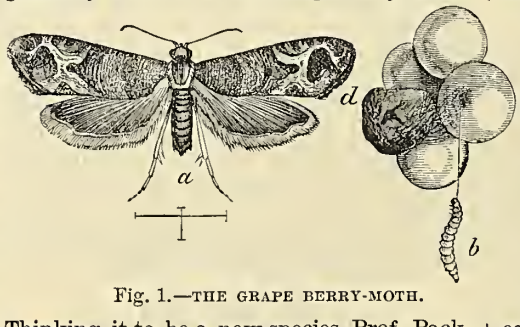


Fig. 1.—THE GRAPE BERRY-MOTH.

Thinking it to be a new species, Prof. Packard named it *Penthina vitivorana;* but later observations show that it is most probably identical with an European insect, in which case, *Lobesia botrana* will be the accepted scientific name. When the grapes are examined early in July, a small spot will be found where the worm entered, as shown in fig. 1, at *c;* if a grape thus marked, is opened, there will be found within a small white caterpillar, with a cinnamon-colored head, which feeds upon the pulp of the berry, and usually eats out the contents of the seeds. If one grape is not enough, it fastens the remains of that to a sound one, by means of silken threads, and makes its way into the second berry. The result is that the berries thus attacked shrivel and die, appearing as at *d*. The worm is very active, and when the fruit is disturbed it will wriggle out of it, and let itself down by its silken thread, as shown at *b*. At maturity it is olive-green or dark-brown, with a honey-yellow head, and it then leaves the ruined grape, to seek a place on the leaves of the vine, where it forms its cocoon.

Fig. 2.

Having selected a spot, it spins a covering of silk over it, and then cuts out an oval flap which is attached on one side, as if hinged, this flap is rolled over, its free edge fastened to the leaf, thus forming a shelter, within which it in two days turns to a chrysalis; fig. 2, shows at *a*, the chrysalis, and at *b*, the cocoon, the line showing the real size. The cocoon is sometimes made by cutting two pieces and joining them together in the middle, as in fig. 3. In about ten days the moth appears; it is of a slaty-brown color, with pale-buff markings, as seen at *a*, fig. 1. There are two, if not three broods, the pupæ of the last brood passing the winter in the cocoons. The insect has been especially destructive in Ohio, where one year it destroyed about half the grapes in the vineyards on the lake-shore; it is also abundant in Illinois, and Missouri, attacking in preference, the grapes with the most tender skins. As the last broods pass their winter in their cocoons on the leaves, it is evident that raking up and burning the fallen leaves, will do much to diminish this pest. The habit of the worm of leaving the berry when alarmed, and suspending itself by a thread, may be turned to good account in capturing this insect, where the number is not large.

Fig. 3.

Early Peaches.—"Waterloo" and "Alexander."

When one has aided in making known a new product of any kind, it is gratifying to have his first impressions of its value confirmed by experience. In October, 1878, we figured and described a new early Peach, the "Waterloo," the trees of which were not then in the market. Our specimens were from the original tree, and at that time seemed to show it to be a variety of great promise. On June 10th of this year we received specimens of the "Waterloo" from the orchard of a prominent peach-grower in Georgia, accompanied by those of the "Alexander," which has been heretofore the earliest Peach. The "Waterloo" was decidedly in advance of the other, apparently a week, while in size and beauty of coloring, it was vastly superior. Were it no earlier, its rich, full color, exceeding that of any other early variety within our knowledge, would give it preference. Another important point is, its excellent shipping qualities; it was in eating condition when received, and remained three

or four days without showing signs of decay. The "Alexander" is now attracting much attention abroad, as being earlier than any European variety. Mr. Rivers, of England, whose father originated the "Early Beatrice," states that the "Alexander" is earlier than that variety, and he might have added, that it is also much larger and finer. The improvement in early Peaches in the past ten years is most marked, and there is reason to hope for still more, if not in the direction of earliness, at least in that of size.

A Lawn Weed—Star of Bethlehem.

(Ornithogalum umbellatum.)

A number of the weeds of cultivation, and some of the most troublesome, were first introduced as garden plants. Escaping from the gardens and finding the climate favorable to their increase, they have become so common that they are no longer cultivated and are now only known as weeds. One of these is the "Star of Bethlehem." This has a bulb about an inch in diameter, which produces narrow, grass-like leaves, a foot or less in length, and with a whitish stripe along the center; they die early in the season. The stout flower-stalk, about six inches high when the flowers first appear, increases later in the season to a foot in hight. The flowers are at first in a flat cluster, but the stem and flower-stalks elongate, and later it has a very different appearance, being open and the flowers scattered. Each lily-like flower is about an inch in diameter, pure white within, but each division is marked on the outside by a broad green stripe for its whole length; the flowers are succeeded by a somewhat three-angled pod. The plant, originally a native of Southern Europe, is naturalized in England and throughout Northern Europe. Its roots are said to be palatable when boiled and to afford a nutritious food. Besides Star of Bethlehem, a name suggested by its star-like flowers, it has others derived from the late opening and early closing of its flowers; it is sometimes called Eleven O'clock Lady," and

THE STAR OF BETHLEHEM.

"Johnny-go-to-bed." The name *Ornithogalum* was given it by the ancients; it means "bird's milk," but the reason for its application is not known. It is believed that the bulbs of this plant were the "dove's dung" mentioned in the Scriptures as having been sold at a high price during the siege of Samaria. In the gardens of half a century ago the Star of Bethlehem was a common plant. When it first opens in May it is rather pretty, and was regarded as worth growing on this account, and perhaps its name also commended it to our grandmothers. It is now quite common in most of the Eastern States, along road-sides and in grass lands. It multiplies its bulbs with great rapidity, and soon spreads and forms large clumps when once established, and the abundance of seed it produces is favorable to its increase and dispersion. A correspondent informs us that it is extending rapidly on Long Island, and that it is especially abundant in Prospect Park, Brooklyn, where it has such a foothold upon some of the lawns that it appears to be displacing the grass, while three or four years ago there was only a plant here and there. With this as with many other weeds, it may be easily eradicated if taken at its first invasion. We find that the plant is known to but very few, and its attractive appearance is such that those who notice it do not suspect its troublesome character. That it may be recognized on its first intrusion, we give an engraving of the plant as it appears when it first blooms. Whenever it occurs in the lawn, as it is there that it is likely to prove most troublesome, it should be dug up; if let alone for a few years it will spread to such an extent that it will be almost impossible to eradicate it. Wherever it may grow, do not allow it to ripen its seeds, as without these its progress is confined to the multiplication of the bulbs, and is comparatively slow.

Pruning and Training the Tomato.

A correspondent asks us to give precise directions for pruning the Tomato, with illustrations, in the same manner that we have done for the grape-vine. It is not practicable to do more than to give general directions, to be applied as the condition of the plant may require, as in an herb like the Tomato, we do not find that regularity of growth presented by the vine. The Tomato plant continues to grow, and to form new stems and new flower buds as long as warm weather lasts, and when the growth is stopped by the first frost, it will be loaded with a large quantity of green fruit of all sizes, as well as many flower buds. Here is a great waste of strength in the plant; it sets and contributes to the partial growth of a large quantity of fruit that can never mature. One of the first steps in the garden culture of the Tomato should be, to prevent the partial growth of all the fruit that can not be ripened. Of course no definite rule can be given as to the quantity to be removed, but each one must exercise his judgment. It is assumed that the plant is trained to a support or trellis of some sort, otherwise pruning would be of little use. One object in pruning should be to remove the superfluous small branches that are produced in abundance, and make a dense, confused mass of foliage. The pruning to remove the excess of fruit may be combined with this; the later flowers are borne upon the small, recently grown branches, and by removing these altogether, two ends are accomplished. When one of the main branches of the plant has set all the fruit it can ripen, it should be stopped, or prevented from growing any longer. An inspection of the Tomato plant will show that it produces its flowers and fruit in a different manner from most others. A flower-cluster generally springs from an axil, or where the leaf joins the stem, or, as in the grape, appears at a point opposite to

PRUNING THE TOMATO.

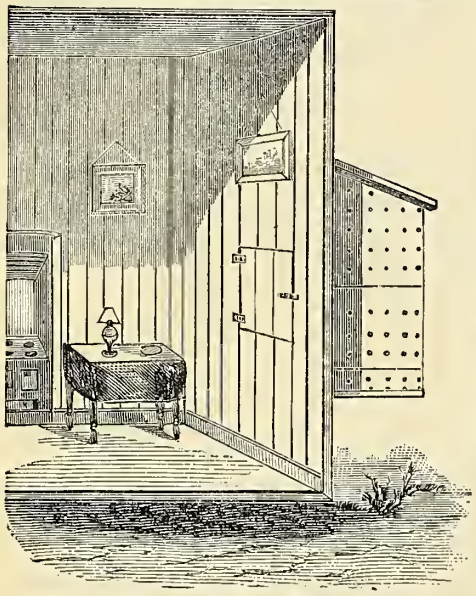
the leaf, while it is in the Tomato midway between two leaves, as shown in the diagram. In stopping the growth of a stem, there should always be a leaf left above the cluster, the line in the diagram showing where to cut; if desired, as a precaution against accidents, two leaves may be left; in this case removing the upper flower-cluster, should there be one above that which has been fixed upon to be the last one upon the stem. When the fruit is partly grown, it will be well to remove all that are deformed and misshapen, and if a cluster promises to be unusually heavy, it will be well to support it to the trellis by a bit of string. Thinning the crowded branches, removing the excess of fruit, and stopping the growth of stems after they have set sufficient fruit, are the ends to be aimed at in pruning the Tomato, and in these one operation usually includes the others. In applying these general rules, which are all that can be given, one, in the first attempt, is not in danger of pruning to excess, but of leaving too much. Those who grow the vegetable in field culture, gathering the fruit by the bushel, and wasting as much as they use, may ridicule the notion of training and pruning the Tomato. Many who have small gardens, and wish to make the most of them, find it a great saving of space, besides giving the garden an air of neatness, to train the Tomatoes to a trellis, and if this is done, pruning becomes a necessity. The ease with which the Tomato can be grown in our climate has led to its neglect, and we rarely have the fruit in its best condition. Some, who are fond of Tomatoes in the raw state, pay as much attention to the quality of the fruit as they do to that of an apple or a pear. Such will find that Tomatoes cultivated with care, fully developed, and thoroughly ripened in the manner indicated, are so greatly superior to those grown in the usual hap-hazard way, as to warrant the slight trouble it involves.

THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Side Closet for the Kitchen.

"Mrs. F.," sends us a sketch of a handy closet that she has used in her kitchen for two years, and writes: The closet is attached to the north side of my house, where the sun shines but little on the longest day of the year. It is two feet from the ground, 3 feet high, 4 feet wide, and 15



A WALL OR SIDE CLOSET.

inches deep. The top is made slanting to carry off the rain, and a strip of tin keeps the water from entering between the closet and the side of the house. The ends are bored full of small holes, to provide for ventilation. Fine wire netting is placed on the holes to keep out all insects. The closet is reached through a door 2 feet wide and 3 feet high, cut in the side of the kitchen. The door is made of the boards removed in cutting it, and shuts flush with the other boards, so that it is not easily noticed. This closet is found to be very handy for keeping many articles of food, etc., at all seasons of the year, and saves many steps to and from the cellar.

Something to Wear.

In a late fashion article a story is told of a poor woman who suddenly became rich, and felt obliged to dress as she had never done before. She had no idea what was "necessary," but a friend who was supposed to know all about it, and to speak as one having authority in such matters, advised her to abandon entirely all her old clothes and begin over completely. Then we are told what constitutes a complete "but not extravagant" wardrobe for those who can afford it. Made in the spring, and without any provision for winter clothing, it includes ten new dresses, most of them made chiefly of silk or satin; four parasols; five bonnets and hats; with a variety of fans, gloves, hosiery, and underwear, mantelets, visites, fichus, collars, etc.

The best part of this little story is that the woman herself did not really enjoy the change. It was her husband who urged it on. She parted regretfully with the dearly-bought garments selected by herself with care, and made according to her "uncultivated" taste, and she was afterwards discovered in a cheap store buying herself some cotton house-dresses, because her new clothes were so nice that she felt she had nothing to wear! Good for her! Let us all learn a lesson of contentment.

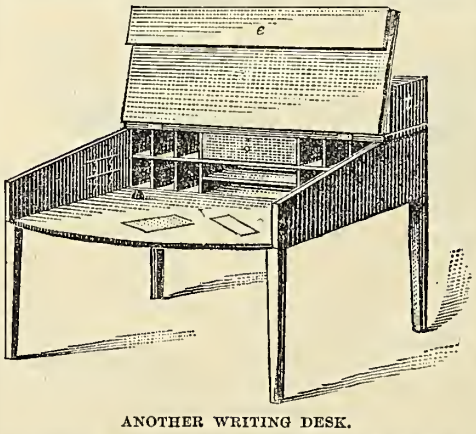
There is a pleasure in overcoming difficulties and "making things do," which is probably quite as great as the satisfaction of feeling that your costume is all right according to the latest fashion. If it is all right to-day, it may be all wrong to-morrow, for fashion's rules suddenly change. It is best to dress according to one's circumstances and work. The dress of a woman of fashion seems to say that she has no work to do in the world that is of more importance than the exhibition of dry goods, made up in curious forms. One cannot consistently claim to dress according to her work, whatever that work may be, so long as the free action of the limbs is hindered by drapery. But, leaving work aside, the necessities of popular recreations are creating a call for a dress that gives freedom to woman's limbs; and one costume for lawn tennis, mentioned in fashion articles, consists of a belted blouse, reaching just below the knee, and Turkish trowsers—the same dress for woman which the great man of fashion, Worth, is said to have recommended as the most beautiful, as well as most healthful, dress in the world. Dressing according to our circumstances, or position, is something each woman should decide for herself, though, in fact, little choice is left to many of us.

Men's Summer Underwear.

It is a very common practice for men and boys to dispense with drawers during hot summer weather. To one who has been brought up in their use, this practice seems unclean and unwholesome, unless the trowsers are made of washable material and frequently cleansed. Very thin cotton-woven garments are to be had, but it is an easy matter to make them from thin unbleached muslin. A cloth of very loose texture (almost like cheese-cloth) should be selected, as firm cloth is very hard to wash when soiled so badly as thin garments are apt to be. You can cut them by a pair of trowsers if you have no pattern, laying the garment on the folded cloth, so as to necessitate only one seam in the leg. This seam should be sloped toward the ankle, and left open about six inches at the bottom. The stockings stay in place much better with drawers than without. If there is trouble about their slipping down, or if low shoes make neatly-fitting hose especially desirable, a suitable elastic stocking suspender is easily provided. Sew a strong narrow strap of the same material as the drawers on the outside of each drawers leg, stitching it on lengthwise of the strap two or three inches, and leaving as many inches of the strap loose, with a button on the end. This may reach a little below the knee. Elastic straps (common rubber tape), with button-holes or loops on each end, should attach to the ends of these straps, and reach to the top of the stockings, to connect there with a button on the stocking. Now, if the drawers are secured at the waist, this will keep the under-suit in good fit. A few buttons sewed inside the waistband of the trowsers, and buttoned through the top of the drawers, will make the suspenders do duty for both garments.

Another Home-Made Desk.

Since the appearance of the desk that was illustrated in the March *American Agriculturist*, several have written me, desiring some form or combination



ANOTHER WRITING DESK.

in which they are not necessitated to write on the leaf or lid, and in accordance therewith I present the following form. This desk is large and roomy, and the writing materials are placed under cover, and are always in their place, ready for instant use. It being so plainly shown, only a few descriptive words will be necessary. A small cover, *e*, folds over and closes the front of the desk; pigeon holes and a small drawer can be arranged, as shown in the engraving; they may be placed in any other desirable position; the part at *t* could be arranged with shelves, or used as a hook-case, or for holding papers and magazines. L. D. S.

Tomato Catsup—Tomato Sauce.

The basis of Tomato Catsup, or Ketchup, is the pulp of ripe Tomatoes. Many defer making Catsup until late in the season, when the cool nights cause the fruit to ripen slowly, and it may be it is gathered hurriedly for fear of a frost. The late fruit does not yield so rich a pulp as that gathered in its prime. The fruit should have all green portions cut out, and be stewed gently until thoroughly cooked. The pulp is then to be separated from the skins, by rubbing through a wire sieve, so fine as to retain the seeds. The liquor thus obtained, is to be evaporated to a thick pulp, over a slow fire, and should be stirred to prevent scorching. The degree of evaporation will depend upon how thick it is desired to have the catsup. We prefer to make it so that it will just pour freely from the bottle. We observe no regular rule in flavoring. Use sufficient salt. Season with Cloves, Allspice, and Mace, bruised and tied in a cloth, and boiled in the pulp; add a small quantity of powdered Cayenne. Some add the spices ground fine, directly to the pulp. A clove of garlic, bruised and tied in a cloth, to be boiled with the spices, imparts a delicious flavor. Some evaporate the pulp to a greater thickness than is needed, and then thin with vinegar or with wine. An excellent and useful tomato sauce may be made by preparing the pulp, but adding no spices, and putting it in small bottles while hot, corking securely and sealing. If desired, the sauce may be salted before bottling, but this is not essential. To add to soups, stews, sauces and made dishes, a sauce thus prepared is an excellent substitute for the fresh fruit. It should be put in small bottles, containing as much as will be wanted at once, as it will not keep long after opening.

Pickles and Pickling.

The number of questions which come to us every summer on the subject of pickles, is very great. The purport of a majority of these is: "How can we put up pickles to look like those sold in jars at the stores?"—The fine appearance of these pickles in bottles, is due to two things: They are made green by the use of copper, and the vinegar is colorless. It is called "White-wine vinegar," but is really made from whiskey. So far as health goes, this vinegar is as wholesome as any other, but it is entirely lacking in the pleasant odor and taste of Cider vinegar. Handsome pickles can not be made with Cider vinegar, but they are a great deal better. The pickles are greened by soaking them to free them from salt, in a copper vessel, or most generally by the use of Verdigris, which is the acetate of copper. As we do not advise the making of pickles green by this process, we do not give the details. Such pickles should not be bought, and ought not to be sold. Serious results may follow the continued use of even the minute quantity of copper these handsome pickles contain.

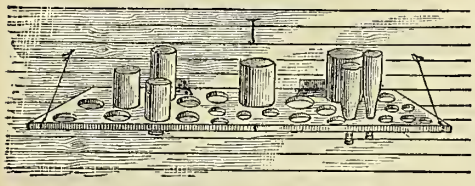
At the pickle-factories, the owners contract with the growers for cucumbers of a size that may be agreed upon, at a fixed price per thousand. If the size is small, the vines must be looked over every day or two. Whatever the size, they must always be cut from the vines, with the stems left on them. At the factories they are placed in large wooden vats, using half a bushel of salt, to five bushels of cucumbers, with water enough to cover them. In salting them for home use, an ordinary whiskey or alcohol barrel may be used, removing one head, and making a follower of boards, to keep the cucumbers under the brine. The cucumbers are placed in the barrel as they are picked, and salt sprinkled among them. When the barrel is half

full, add water to cover the cucumbers; as more are added, use more salt, and water if needed, to cover them, using half a bushel of salt to the barrel. When full, head up the barrel, knock out the bung, and fill up completely with water. In tight barrels cucumbers in a brine of this strength, will keep for a long time. In salting small quantities, a brine strong enough to float a potato may be ponred over the cucumbers, placed in a jar or keg. It takes about a month for the brine to thoroughly penetrate them, and make them fit for putting into vinegar. For family use, most persons prefer the cucumbers rather larger than those sold in bottles; whatever the size fixed upon, it is desirable to have all in the same lot as nearly of a size as possible.

The following vegetables may be salted in the same manner: Green Tomatoes, String Beans, Green Peppers, Martynias (taken when very tender), and unripe Melons with the contents removed through a hole made in the side. Peppers have a slit made in them to admit the brine into the interior. At the pickle-factories, great care is taken to use only the purest salt; that containing lime is said to cause decay. Coarse salt in crystals is the best.

Side-Shelf for Draining Bottles.

Bottles for holding fruit, catsup, etc., should, when emptied of their contents, be thoroughly dried and aired, after being well washed and rinsed, or when they are refilled the fruit will not keep well.



SIDE-SHELF FOR BOTTLES.

It is a hazardous undertaking to stand bottles up on a table to drain, especially the long, slender ones so often used for holding catsup, for the least jar may send them over and break them. Besides, when stood up on a table, although they will be well drained, the air is not free to circulate through them. Sometimes I have used a simple little contrivance which overcame both difficulties. It is a board 4 feet long and 15 inches wide, in which are over two dozen various sized holes, the largest of sufficient diameter to admit the mouth of a good-sized fruit jar, and the smallest large enough to hold the slender necks of catsup bottles. The board is fastened to the wall on a south porch by hinges. Twine strings pass through holes in each end of the board, and fastened to staples in the wall, hold it in place at the right angle. When not wanted, the shelf can be hooked up against the wall; but this is seldom necessary, for when not in use in holding bottles, it makes a handy temporary resting place for such articles as partly ripened tomatoes and seeds. MRS. BUSYHAND.

What Shall We Eat?

BY A MINNESOTA HOUSEKEEPER.

I never felt more at rest myself on that question than I do now. There is one thing, anyhow, always on hand—material for bread, which contains all of the elements needed for the growth and repair of the human body. All we need besides is "trimmings," and less of those, apparently, than ever before. Meat is fifty per cent higher than it was a year ago, but that fact is nothing to us. We do not "hanker after it" at all, and we live and grow and work hard and enjoy life without it.

All this we had settled in our own minds before we saw that the entire wheat flour, mentioned last month, had been examined by a doctor with the microscope, and found to be the best of many different kinds of flour. He commends the large proportion of "gluten-cells," and speaks highly of it for children and invalids. Though we are not exactly invalids nor infants, we believe that the flour which is best for them is best for us also, to keep us in health and to promote healthy growth.

I smiled as I read over the last article I wrote about bread, for I suspect that I have said my last good word for white bread. We had to go a month between our first half barrel and our next barrel of entire wheat flour, living on white bread and Graham. I had just baked an ovenful of white bread (uncommonly nice, I thought), when the new barrel came. It was two weeks from that time before I could get all of that white bread eaten in any shape, mostly in toast, the last in pancakes, which is expensive and bothersome, and less wholesome, I think, than the best of bread. The only decent Graham we can get costs six cents a pound, and as about one-third of that is bran, the nourishment it contains costs us as much as eight cents a pound.

Whiteness has long been considered one of the most desirable qualities in bread. But how innutritious white bread looks to me lately! How rich and good the brown! Yet I never felt so about the coarse Graham. And then one needs to learn how to cook the new flour. However it is baked, it must have more room to swell than common flour and it must be thoroughly baked. A *soft* dough and a *thin* batter is the rule you must go by. As I find dry yeast most convenient, I usually scald a batter of the new flour at night, and when cool enough, stir in the soaked yeast. Before breakfast I stir this thick with flour and knead it well, not letting the dough get too stiff, put it directly into the pans to rise, and have the baking soon over. You can begin early in the morning, without scalding the flour, and have the baking done betimes if you use only the best and freshest yeast, and keep the sponge warm.

Perhaps a good word ought to be said for bran, after all, as a medicine! Those who have been long accustomed to its irritating action, to overcome the natural tendency of a sedentary life and full habit of living, cannot, perhaps, easily dispense with it. Some waste matter is undoubtedly necessary to promote digestion, but bran, for that purpose, seems dear at six cents per pound. All our fruits and various kinds of vegetables afford considerable waste matter, as well as does bran.

Cisterns Cheaply Made.

BY EBEN E. REXFORD.

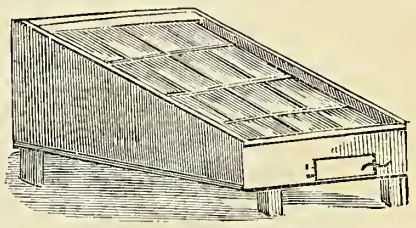
About the majority of country and village houses, one sees old barrels, with boards or troughs, and occasionally eave-spouts of tin, arranged to conduct water into them from the roof. The supply thus obtained is often inadequate to the wants of the family, and soon becomes unfit for use. Dead leaves, worms, all kinds of flying refuse, collect in the barrels, and they afford breeding places for myriads of mosquitoes; besides the supply of soft water is in a condition to use only a short time after a shower. Every house should have a cistern. None but those who have been accustomed to the use of soft water in domestic operations, know how much superior it is to hard. It not only makes things cleaner, but the labor of cleaning is greatly lessened, while hard water ruins woollens.

The expense of building cisterns is not large. In localities where the soil is composed principally of clay, I have seen them built by digging a hole in the ground, and plastering the exposed surface with water-lime. Generally a layer of stones is placed in the bottom, over which a thin mixture of lime and water is poured. This runs down among the stones, fills all the crevices, and settles into a smooth surface above them, and, when dry, forms a floor of sufficient thickness and hardness, to allow any one to tread upon it while cleaning out the cisterns, without danger of breaking the floor. Plaster the lime directly upon the slanting sides of earth, with a common trowel. Care should be taken to not mix up a great quantity at any one time, as the lime soon "sets," and it becomes impossible to smooth the walls properly, if too large a surface has been plastered over roughly, before beginning the smoothing process.

The top of the cistern should be well covered, and pains taken to see that the earth on which the wall is put, is below frost in winter, otherwise freezing is likely to crack the coat of lime, and cleave it off, or leave cracks, through which the water will soak out. If properly banked up in winter, such a cistern will last for years; it is quite as satisfactory, indeed, as one built up of brick or stone. An opening large enough to admit a person should be left in the covering. In cleaning it, the walls can be readily washed, and all slime completely removed by using a stiff scrubbing brush. Such a cistern costs but a few dollars in its construction, and will pay for itself in a short time.

Drying Fruit, etc., for Home Use.

In a former number we have suggested that those who dry fruit for market in the old-fashioned way can not hope to compete with that dried in the evaporators, and that it would be better for neighbors to co-operate in procuring the needed apparatus. By going to a little trouble, fruit for home use can be dried in much better condition than usual, by arranging a box covered with hot-hed sash. Though we illustrated this last year, yet so many have inquired about fruit-drying, that we reproduce the engraving. A suitable box, tight enough to keep out insects, is built; this is of a width and length to hold the desired number of sashes; hot-bed sashes are the best, as they are so made as to allow the rain to run off. The box should be raised some inches from the ground, upon legs, or placed upon pieces of joist. The important point is the ventilators; there should be an opening a foot long and 2 or 3 inches wide, at each sash, low down in front, and a similar one at the rear, near the top of the box. These openings are to be covered with wire-cloth, but mosquito netting or other open fabric, will answer. The articles to be dried may be placed upon cloths, spread upon the bottom of the box, but it will be much more rapid if placed upon trays, made by covering frames with some thin open material; these trays should be raised a few inches above the bottom of the box, so that the air may pass up through them. The drying will be done very rapidly, and the articles free from dust and all soiling by insects. The thinner the fruit is sliced the more rapid will be the drying. In drying sweet corn do not let it get too old, but take it in just the proper condition for the table, and cook it as if to be eaten before cutting it from the cobs.



A "HOT-BED" FRUIT DRYER.

Egg Gravy.—When eggs and butter are both dear, I sometimes make what we call an egg gravy for a dressing to bread and potatoes. Break and beat up light four *fresh* eggs, and mix thoroughly a thin paste made by stirring well together, a tablespoonful of flour, and about half a teacup of water. Heat to boiling one quart of sweet unskimmed milk, and just as it boils, add a level teaspoonful of salt. Then turn in slowly (stirring rapidly), the mixture of eggs and flour paste. Let it all boil together for a few minutes, stirring well nearly all the time, and turn it out for the table. F. E. R.

Peas.—Americans are great consumers of green peas, but they are far behind the Europeans in the use of ripe peas. These are imported as "split peas," the hull being removed and the peas split in halves. They are about equal to beans in their amount of nutriment, and should be more generally used, if only to give a variety, than they are by our people outside of cities. A bowl of pea-soup at mid-day is equal to a hearty dinner.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

You will recollect that I began these "Talks" about flowers and plants in May last, with the Buttercup, and since then have described several other flowers. I have tried to show you that, however unlike the Butterenp they appear, they resemble it in many points, and that they are all made upon the same general plan, but differ in details. It is this plan of the flower that I wish you to understand, and gave it in the first Talk. If you have forgotten the parts and their positions, you will do well to read the description of the Buttercup over again. When you understand the Buttercup, or any other flower thoroughly, you will know what to look for in all other flowers. It is true that some of the parts belonging to the Buttercup may not be found in all the flowers that you come across, but the parts that are present, will always be in the same position in relation to one another, that they are in that flower. You can notice in the fields, in the woods, by the road-side, and in the garden, flowers in great variety, and in outward appear-

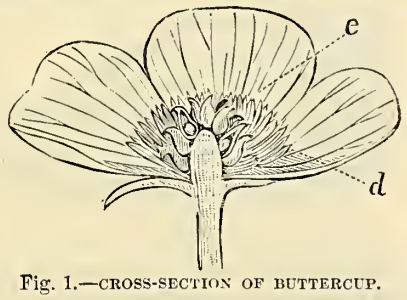


Fig. 1.—CROSS-SECTION OF BUTTERCUP.

ance very unlike. If you were to go to a distant country, to South America or Australia, you would find a great number of flowers, all very different from those at home, but the little Buttercup has given you the key to them all. It has taught you what parts to look for, and where to expect to find them. In the first Talk, I asked:

What are Flowers For?

These thousands of flowers all over the world, so different in general appearance, yet really so much alike, are all engaged, so to speak, in doing the same thing. They are for an object, and that is, the continuation of the kind of plant that bears them. Some plants live for a single season, and then die; others die in the second summer, while others live on for many years, it may be, like some trees, for hundreds of years. But at some time, the longest lived die, and all sooner or later prepare for others of the same kind to take their places.

Fig. 3.

Fig. 2.

This is Done by Seeds,

and the whole object of the flower—of all flowers, in all their great variety, and often wonderful beauty, is to produce fruit, which contains the seeds. To go back once more to our Buttercup. We will, for convenience, bring this flower here again. In the very center, we have the little bodies (fig. 1. *c*,) called pistils, and just outside of these, the pollen-producing stamens, *d*. After the pollen from the stamens has fallen upon the pistils, the stamens and all the other parts of the flower fall away, leaving only the pistils. You will recollect that each pistil (fig. 2,) contains an ovule, fig. 3, and this grows and becomes a *seed*, while at the same time, the pistil itself grows larger, gets hard and dry, and ripens into a *fruit*. A fruit is not always pleasant to eat.

Fig. 4.

The Fruit is the Ripened Pistil,

and whatever is attached to it, whether juicy as in the pear, or dry as in the hickory. The Buttercup produces a little, dry, one-seeded fruit. If you examine the pistil of the pea, you will find, instead of one, several ovules, and the pistil ripens into a fruit, the pod, which is tough and dry, with several seeds, as in fig. 4, which shows one-half of it. In both of these, the Buttercup and the Pea, the pistil becomes hard and dry in fruit. Let us look at the flower of the cherry or peach, but as the season has passed, we must take the engraving in place of the flower itself; fig. 5, of the cherry, will answer also for the peach, as they are much alike. Compare the flower with that of the Buttercup. You find as in that, outside, *a*; the green calyx next the petals, *b*; within these, *c*, the stamens, and in the very center, instead of, as in the Buttercup, many pistils, there is but one, *d*. Another thing you will notice; in the cherry, the calyx, corolla, and stamens are united, have grown together as it were, for part of their length, to form a little cup. These

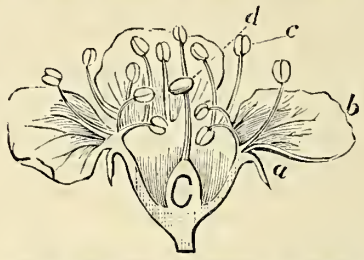


Fig. 5.—SECTION OF CHERRY FLOWER.

parts in the Buttercup are all separate and distinct. Observe that the parts are in the same order in both flowers; the solitary pistil of the cherry, like the several pistils of the Buttercup, in the very center of the flower. When the pollen of the cherry has fallen on its pistil, the rest of the flower falls away, and the pistil begins to grow. But as it grows and matures, it does not become a hard and dry pod, as does that of the Buttercup and the Pea, but a wonderful change takes place. The pistil in the first place grows enormously, and as it ripens, it becomes in part, very soft and juicy. I say in part, for the pistil itself does not all become pulpy. The Cherry, the Plum, and the Peach, you know, are called "stone-fruits," and the change that takes place to form the "stone," is quite as marked as that which produces the flesh. Let us take a section of the Peach, as that is larger; in this, fig. 6, after the flower falls, the pistil grows very rapidly. While the outer part of it is becoming soft and pulpy, the inner part is growing hard and stony; you know how hard it is if you try to make peach-stone, or cherry-stone baskets. When the Peach is ripe, in some kinds, the free-stones, the flesh and stones separate readily, while in the cling-stones, they remain attached to one another. The peach-stone is not, as is generally supposed, the seed, but is a part of the pistil. The seed is within the stone, the "peach meat," as it is often called. In the pistil of the Peach, etc., there are two ovules, side by side, but as a general thing, only one of them ripens, the other shrivels up and comes to nothing. Sometimes, however, both ovules ripen into seeds, and you have two in place of one, or "double meaters" as the boys call them. It will be too

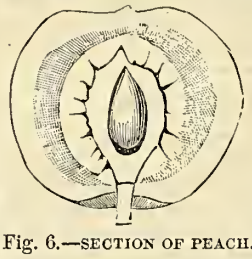


Fig. 6.—SECTION OF PEACH.

late for cherries, but you can watch these changes in the late peaches and plums, and by cutting one cross-wise occasionally, see how the originally soft pistil becomes, on its inner part, gradually harder, while its outer part grows softer as it ripens. Let us now look at another kind of fruit. If you cut down through the flower of a Strawberry, a Blackberry, or a Raspberry, as you did with the Buttercup, it will appear much as in fig. 7. Here you have, as in the Buttercup, the calyx, and corolla; then numerous stamens, and in the center a number of pistils upon a receptacle, or the rounded end of the flower stem. This, fig. 7, is the flower of the Strawberry; that of the Blackberry, more likely to be in season, is like it, except that the central part, the receptacle, is longer and narrower. After the Blackberry petals and stamens fall away, the pistils begin to ripen; they grow rapidly, and if you cut through the fruit lengthwise, before it is quite ripe, as in fig. 8, you will see that each pistil becomes a little drupe or stone-fruit, fig. 9, just like a miniature cherry or peach. The same

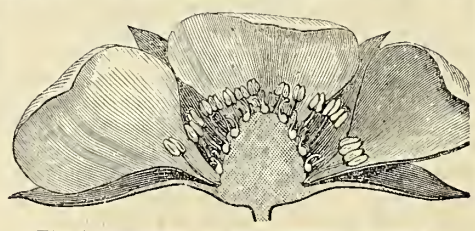


Fig. 7.—SECTION OF STRAWBERRY FLOWER.

thing takes place within the Raspberry; the flesh in the little drupes is softer and more juicy. The chief difference between the Blackberry and Raspberry is this; in the former, the drupelets, or grains, are attached to the receptacle, while in the other, they cohere slightly to one another, but when ripe, readily leave the receptacle, and in picking the fruit, we leave this on the bush, as in fig. 10. In the Strawberry a still more curious change takes place. The pistils do not increase greatly, but ripen into little, dry, one-seeded fruits, which many take to be seeds, but the proper seed is within them. As these ripen, the receptacle enlarges greatly, it becomes soft and juicy, and eatable, while the real fruit is scattered over the surface, or is sunken in little

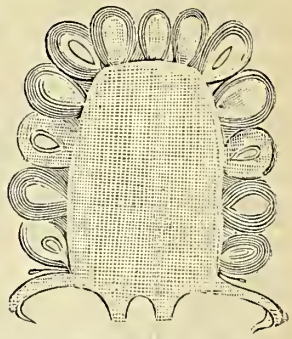


Fig. 8.—SECTION OF THE BLACKBERRY.

pits, or depressions, as in figure 11. In the fruits here described, we make use of very different parts; in the Pea, we eat the seeds themselves; in the Cherry, Peach, and Plum, it is a part of the ripened pistil; in the Blackberry, many ripened pistils, with the receptacle to which they are attached; in the Raspberry, it is the ripened pistils only, without the receptacle; while in the Strawberry, we eat the ripened pistils, because we can not help it, as they are on the receptacle, which is the eatable portion, and what we really value in the Strawberry, is the juicy fruit-like end of the flower-stalk. There are still other fruits to be described, but they must be left for another Talk.

Fig. 9.

By examining the fruits at different times as they are growing, you can better understand their real nature, than if you wait until they are quite ripe. I would add that the Almond is own brother to the Peach, but it never becomes fleshy; after flowering, it increases a good deal in size, but instead of the outer part becoming soft and juicy, as it does in the Peach, it gradually becomes dry and breaks away from the stone or Almond shell. The eatable part of the Almond is the seed itself.

Fig. 10.—"HULL" OF RASPBERRY.

Largest Cities in the World.—When we studied geography in school, fifty years ago, the largest cities were supposed to be Pekin in China, Yeddo in Japan, and London in England, which had about one and a half million of inhabitants. Now the population

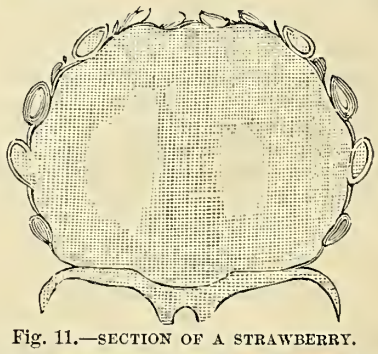


Fig. 11.—SECTION OF A STRAWBERRY.

of Pekin is very uncertain, being only "estimated," and may not be a million. Yeddo is also uncertain, (perhaps 900,000). But London has towards five millions (4,764,312), which however takes in all the surrounding, thickly settled population, included in the "London Police district," on both sides of the Thames river. Paris in the same way, on both sides of the Seine river, has 2,747,000 population, and New York in the same way had nearly two millions (1,942,000), that is taking in Brooklyn, Jersey City, Hoboken, and L. I. City, all of which are really part of New York, being only separated by narrow water channels. At the present rate of growth New York will soon be the second city of the world, and quite probably many of the boys and girls who read this will live to see it *the* largest city on the globe.—Only thirty-one years ago when we visited Chicago, it looked like a large village or small city, and had less than thirty thousand people in it. Now it has about twenty times as many (503,304 by 1880 census).

A Marsh Wren's Nest.

In tbe upper part of Sheep's Head Bay, many sociable little Marsh Wrens huild their nests in the "Cat-tails," and last May two came so near our land, that the children, hy climbing on a high fence, could look down and see them at work on their nest. They would disappear suddenly, then fly back with long pieces of sea-grass, and weave them ingeniously into shape. Work seemed to make them very happy, and they chirped their quick fright-note from early morning until long after nightfall. When we saw the nest smoothly and beautifully finished, and so thickly and firmly made, we thought it would he a snug resting place for a little brood. We soon hegan to wonder if the eggs had come, so one day, Uncle Will got on his "hip-boots," and waded out to the nest, and found eight tiny brown ones. The little mother bird began to sit patiently upon them, and soon wakened into life, eight specks of wrens. One dark afternoon the wind blew from tbe Southeast, and the rain begau to fall, and tbe little nest rocked violently in the weeds. The parent hirds fluttered in distress about the nest as you see them in the picture, for they knew their little ones' lives were in danger. The children went to hed with sober faces, fearing that before morning their pets would be drowned, but when they arose,

A MARSH WREN'S NEST.

the sun was shining, and Uncle Will brougbt the welcome news that the nest bad withstood the storm, and tbe little hirds were safe. We watched them carefully each day, hut they soon grew too large for their nest, and flew away to think about building homes for families of their own. We did not like to have the nest destroyed, so it was carefully cut down, attached to the "cat-tails," and afterwards fastened tastefully over the cabinet in the parlor. AUNT IDA.

Answers to Puzzles in the June Number.

THE SHIPWRECK PUZZLE.—o o o o o o o o o o o o o o o o o o o o o o o o o o o o o o.

ANAGRAMS.—1. Otherwise. 2. Displeasure. 3. Serviceahle. 4. Dogmatic. 5. Ceremonies. 6. Ahorigines. 7. Spectator. 8. Handicraft. 9. Youngest. 10. Bachelors.

SQUARE WORD.—

L A R K
A L O E
R O S E
K E E L

PATCHWORK.—1. Wattle. 2. Orlop. 3. Origin. 4. Purvey. 5. Quill. 6. Lank.

METAGRAM.—*Forest*, from which may be obtained the words, rose, ore, store, set, for, frets, rest, frost, fort.

CROSS WORD.—Genuine.

Arithmetic.—Geometry.—Euclid.

All our young readers know sometbing abont arithmetic, or the science of numhers, which treats of addition, suhtraction, multiplication, and division. It is a most useful study, and however hard it may be, it is, after reading and writing, the most important and useful of all studies, no matter what occupation one may follow. To he quick at figures, including the use of fractions, belps one very greatly. It is a hard study for some, but the harder it is, the more important it is to drill one's mind in it, and thus make up for any natural deficiency. The man or woman who is quick at figures, always has an advantage over those who are not. Indeed, as we bave observed the course of individuals, of our old schoolmates of fifty years ago, and of multitudes of others, we fully believe that a hoy or girl who can read and write fairly, and use numbers quickly and correctly, has many times more chance of success in life than one who lacks the arithmetic. And mental arithmetic, that is, workiug figures in the mind, without having to always use slate or paper to bring in the aid of the eye, is very important.

Geometry is also a very useful study. It formerly meant only the art of measuring the earth, or any distances or dimensions on it. (Indeed, it comes from two Greek words, *gė*, or *geo*, the earth, and *metron* to measure, just as *geo-graphy* means a description of the earth.) —But *now*, Geometry means the science of magnitude—the correct measuring of lines, surfaces, and solid bodies, and their relations, and everybody bas use for such knowledge. It is an excellent and most useful study for farmers, as well as all others. Many of our readers, no doubt, have studied it, or are doing so.

Euclid is a name often used for Geometry, because a Mr. Euclid was tbe earliest one who wrote a number of books on the suhject. We wonder if many of our readers know that Euclid lived between two and tbree hundred years hefore Christ, in the City of Alexandria, in Egypt! At that early day he wrote 6 books on plain Geometry, 3 on the Properties of Numbers, 1 embracing both of these, and 3 on Solid Geometry, or 13 in all, which bave come down to us from that early time.

Old Sights with New Eyes.

Out of the busy walks of daily strife, there is much of beauty if we could only see it, and it seems to me that the wealth of treasure tbe waves cast ashore, may fairly claim a share of our attention. It would be too vast a subject to make a study of all the sbells of our Atlantic Coast, but perhaps a knowledge of some of the most common specimens would interest a heretofore casual observer, and add new interest to his strolls on the beach. The "Skimmer-clam" (fig. 1,) is the largest of all the clams on our coast, and received its name from the old Dutcb settlers, who used the shells for skimming milk. They were used also by country grocer-men, for dipping up soft-soap. The shells, though rough on the out-side, have a beautiful polished lining, and shading of blue color near the edges, and are converted into really heautiful objects by artists, who paint Sepia sketches on their insides. Children at our seaside resorts are fond of gathering them, and dig for bours with them in the sand. Where cod and haddock fishing is extensive, these clams are collected in large quantities, for baiting the trawl lines. They are kept in net-bags, suspended in fish-wells of vessels, and thus protected from the fish tbat would crush tbem witb their teetb; tbey often make attempts, however, and entangle their heads. These clams are very interesting in aquaria, wbere a bed of sand should be made for them to burrow in. If dropped suddenly on a gravel bottom, they jnmp about in despair, trying with tbeir long foot to find a soft place. The thin slender "razor-fisb" (fig. 2,) so called from its resemblance to the old-fashioned horn-handled razor, burrows downward into the sand, and will disappear almost instantly wben alarmed. It has a long foot in the middle, which is pointed at tbe end; by this it raises itself to tbe entrance of its hole. Epicures consider this shell-fisb a delicacy, and there are still heaps of the shells on Long Island, left by the Indians, who used them as an article of food. No shells have been used in ancient or modern art, so mnch as the symmetrical Scallop Sbell (fig. 3.) They were worn in the time of Christ by people who had been to the Holy Land, and were known as "Pilgrim Shells." They have a comb-like appcarance, rounded ribs, and varying color, wbicb can be made clear by dipping for ten minutes into

Fig. 1.—THE SKIMMER CLAM.

Muriatic acid, two-thirds diluted with water. Our's are too small to answer the English purpose of serving up "White-bait," and "devilled crab," or to bake pies upon after their fashion. When living, the Scallop has a peculiar dancing movement, if alarmed, and when confined in aquaria, will dance about in comical fashion, if the glass is struck suddenly. Few people seem to know that tbis is the edible scallop, or if so, that the only part eaten is a powerful muscle that opens and shuts the shell. The beautiful "rim," or "mantle," which glistens like a row of pearls in the water, is never preserved except when used as bait for eel-pots. These shells

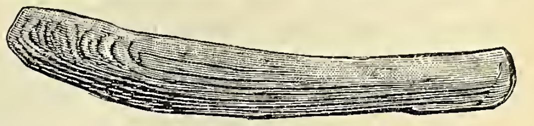


Fig. 2.—THE RAZOR SHELL.

were formerly much used for fancy work. The large ones were fastened in pairs at the hinge, and between them a stuffed cushion, made of a shape to fit, was fastened. This cushion, about an inch thick at the edge, and covered with velvet or a bit of figured silk, was glued between the two shells. Small shells, an inch or two across, were used to cover pasteboard vases, but this use seems to have gone out of fashion. Figure 4 represents the graceful pear-shaped Winkle, and has a brown out-side, and pink and yellow lining. The most interesting fact about this animal is, that it makes a beautiful, long, translucent egg-case, that often washes ashore, and reminds one of the lost necklace of a water-nymph. This spawn is made up of little cases about the size and

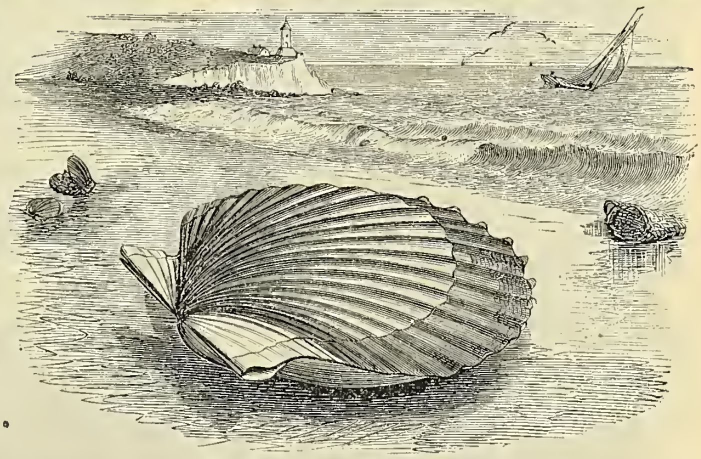


Fig. 3.—THE SCALLOP SHELL.

tbickness of a two-cent piece, which are fastened together in parallel position by a strong ligament. In each case are stowed away about two hundred eggs, only a few of which are hatched, those coming to life first having subsisted on the rest. The parent attacbes the egg-case to some heavy object, and the deep dredge hrings many of them up. Tbose wasbed ashore have hroken loose, and are generally dead. The flesh of the Winkle is tough, and seldom eaten. I have heard, however, of a colony of negro fishermen, living near Keyport, N. J., who eat them after long cooking, and so many shells are seen ahout tbeir huts, that the locality is known as "Winkletown." The New Jersey farmers cook them also as food for ducks and pigs, and a veteran of the late war told me that soldiers made soup of them when on the coast. Fishermen make practical use of tbese shells when tarring hoats; they fill them with hot tar, and use the spout-like end of the shell to direct the flow, hence, in many localities, they have the name of "ladle-shells." If ladies choose to collect them, they can he used ornamentally among rustic work, and are by no means unsightly when converted into hanging haskets. To make one of these, select a large shell, and attach tbree wires to hang it by. By the use of a drill, or even a small awl, holes can be bored, if you are careful and have patience. Two holes will he needed, one at each side of the broader part of the shell; and while it will be better to have one at the narrow spout-like part, the wire may be twisted around this. Fill the cavity of the shell with peaty soil, or woods' earth, and set in it any small drooping plants. AUNT IDA.

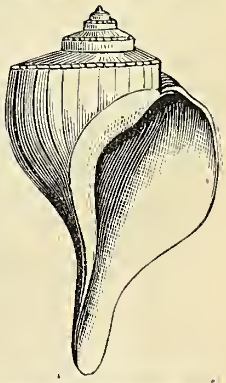


Fig. 4.—THE WINKLE.

The Voyage of the "Waterwitch."

BY AGNES CARR.

One sultry August day, beneath the shade of a grand old oak tree, and by the side of a bright, laughing, little brook, that murmured a low, sweet song, as it danced along over the pebbles towards the arms of its mother—the river, two happy children were playing merrily on its mossy green bank.

A bright-eyed girl held tightly clasped in her arms, a daintily dressed doll, while her brother, with bare feet, waded in the clear water, floating a miniature yacht, with snowy sails, and gay pennant, upon the rippling stream. "See, Effie," he cried, "how finely the Waterwitch cuts the waves! Uncle John says she is perfect in every part; and is'nt she a beauty?"—"Yes, indeed, Charlie," responded his sister with enthusiasm; "and Miss Sophy must have a sail;" saying which, she ran down the bank, and stowed the waxen doll carefully away in the boat.

For a time both were interested in loading the tiny craft with a cargo of wild flowers, and sending it on trips to the opposite bank, but at length, growing weary of this, they tied the string to a bramble-bush, and wandered away in search of other amusement. A bushy-tailed squirrel scampering through the wood attracted their attention, and off they started in pursuit, leaving the Waterwitch to the care of the wind and waves, which were softly but steadily tugging at the slender line that bound it to the shore, until a sudden gust snapped it asunder, and the boat was free.

The birds in the trees overhead, sang "good bye, good bye," the wee little wavelets lapped her sides, seeming to say, "Come away with us to the beautiful river," and with Miss Sophy as passenger, off she started, past the green banks where the children played, past the lily pads, where snowy blossoms opened their golden hearts to the sun, through whirling eddies, and dashing rapids, until at length the little bark was fairly launched upon the great broad river. A butterfly rested awhile upon her sails, and flapped his gay wings in Miss Sophy's face, people shouted from the shore, and fish came up and bumped their noses against her keel. Night closed in, and still beneath the twinkling stars, the runaway sailed on, with the pretty doll lying on her back, her blue eyes staring at the mid-night sky, while far away the boyish owner bewailed his loss, and Effie wept because her lovely Sophy had been carried off by the Waterwitch.

Just where the river empties into the ocean, on a lonely point of land, a fisherman had built his cot, and here another boy and girl, of about the same age as Charlie and Effie, led a far different life from theirs, for never had either owned a plaything not made by themselves. Molly was a womanly little creature, and her father's house-keeper, forming dolls for herself of sticks or corn-cobs, and prizing as her choicest treasures, a few old hooks left her by her mother, while Jack mended nets, and was happy if he could rig up an old wash-tub, in which to paddle along the shore, although it frequently turned over, and treated him to an unexpected ducking in the water. In fact, he was so fond of this style of navigation, that a quaint old light-house keeper, who dwelt in his tower on a headland near by, nick-named him "Diogenes," after the philosopher, who made his home in a tub. "Ah! if I might but have one of those wooden dolls from the town," Molly would sometimes sigh, and then Jack would straighten himself, and say, "just wait until I am old enough to go to sea with the fishermen, and you shall have a dozen." But immediately Molly would think of an older brother, drowned years before, and answer: "I do not like the ocean, it is cruel, and treacherous, but I love the river, that is sweet and fair, and will some day bring us good luck."

One summer morning, Jack was up with the dawn to dig bait for his father, for he well knew it is the "early bird that catches the worms," and had his tin can half full by the time the sun had slipped off his nightcap, and lighted up with his first rays something white, tossing about on the surface of the river. "Can it be a sea-gull, way in here!" Jack first thought as he caught sight of it, and then as it came nearer, with a suppressed shout he hurried down to the shore, launched his clumsy tub-boat, and rowed towards the middle of the stream. "It really is a baby yacht!" he exclaimed, as the Waterwitch, for she it was, floated by him, and he tried with a pole to draw her towards him, as you may see in the picture. He made several attempts before succeeding, but at last the career of the runaway was stopped, and Jack gave a shout of triumph as he drew her from the water, which changed to one of surprise as he discovered the lone passenger on board, and lifted out Miss Sophy, who, though her costume was somewhat damaged by the spray, looked as placid and serene as ever. Molly, who was busy preparing breakfast, heard Jack's cheers, and came running from the cottage to see what had happened. She opened her eyes in amazement at the yacht, but when the travel-stained young lady was placed in her arms, fairly cried and laughed for joy.

"It is a fairy doll," she said, "and the beautiful river has brought us luck at last." And she named her new treasure Undine, after the water maiden in one of her favorite books. The Waterwitch, too, had found a safe harbor at last, and was a source of great wonder and delight to all the rough fishermen on Lonely Point, while to Jack she was a prize indeed.

It happened that some weeks later, Charlie accompanied his father on a pleasure excursion down the river, when what was his amazement to see his long-lost yacht dancing along in the wake of a funny looking tub, from which a white flag was flying, and in which was seated a boy of about his own size. He stopped to ask an explanation, and so learned of the long voyage made by the Waterwitch. "She is mine, and no mistake," he said; "but," as he caught sight of the fisher-lad's downcast look, "never mind, Jack, I will make you a present of her, and I am sure Effie will be pleased to have your sister keep the doll, as Uncle John has consoled her with a much handsomer one."

And so she was, for shortly after Molly received a neat little trunk, containing all Miss Sophy's numerous dresses, which exactly fitted the new Undine, who frequently takes short trips in the Waterwitch, but has never attempted another voyage. It is truly wonderful how great things have small beginnings, and out of seeming trifles and petty mistakes, even, events of vast importance frequently grow.

JACK IN THE TUB-BOAT WITH THE WATERWITCH.—*Drawn and Engraved for the American Agriculturist.*

Boys' and Girls' Collections.—We heard a person, not long ago, ridiculing a boy for collecting postage stamps. If, in collecting stamps, one does it only to see how many he can get, very little benefit comes from it. If the collecting of stamps of little known countries leads to the reading about those places, their forms of government, etc., then something useful may come of it. But why should boys and girls who live in the country collect postage stamps when they can do so much better? Let them collect specimens of all the woods that grow upon the farm, not only of trees, but of shrubs. How many know the acorns of the various oaks, or the nuts of the several hickories. One of the most curious collections we ever saw was made by a young girl of all the beans she could get. We do not recollect how many there were, but the number and variety were astonishing. Such a collection is curious, but it has very little use. Much better would it be to make a collection of the seeds of all the weeds you can find. If these were put in separate packages and properly labelled, they would be useful for reference. When a lot of clover seed, or other seed is bought, it can be examined for foul seeds, and if you have a collection of weed seeds at hand, you can ascertain the kind mixed with that to be sown.

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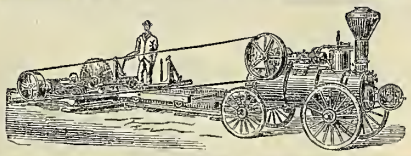
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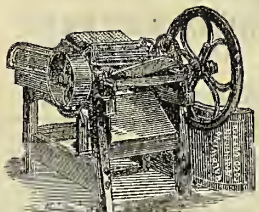
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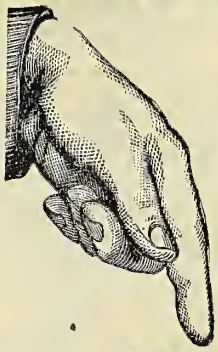
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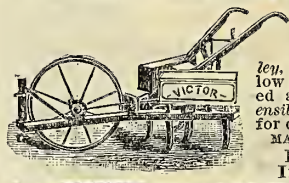

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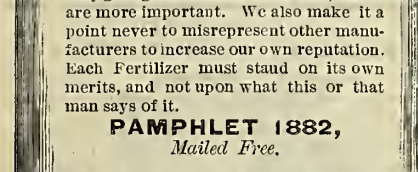

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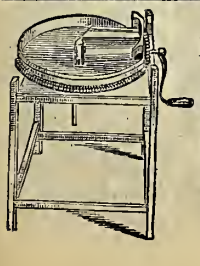

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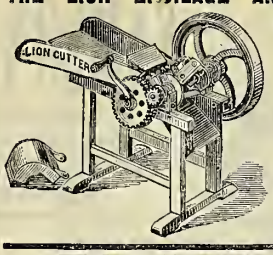

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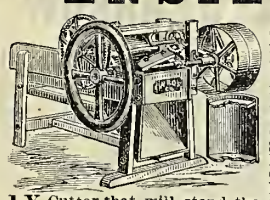

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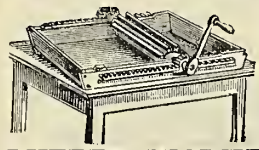

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During the month of August subscriptions will be received for the **CHICAGO WEEKLY NEWS**, extending from the date of receipt to January 1st next for **TWENTY-FIVE CENTS.** The **CHICAGO WEEKLY NEWS** is a large 32-column paper, edited with special reference to the needs of the family circle. It is especially complete as a *news* paper, every issue presenting complete telegraphic reports of all important happenings the world over. Its **Chicago Market Quotations** are full and trustworthy. It is **Independent in Politics**, giving all political intelligence free from partisan coloring and discussing political questions without fear or favor as to parties. Condensed notes on **Art, Literature, Science, Industries, Fashions,** etc., and **SIX COMPLETED STORIES** in every issue. It is the cheapest metropolitan weekly published in the United States, costing only **SEVENTY-FIVE CENTS A YEAR.**

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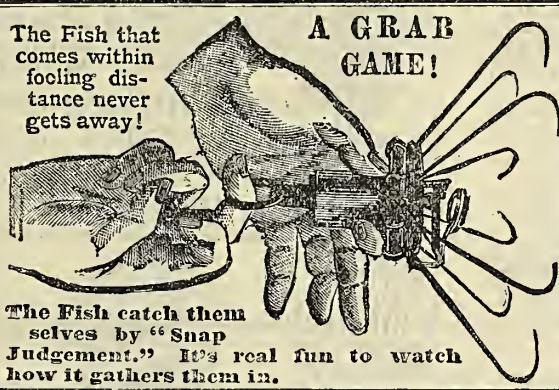

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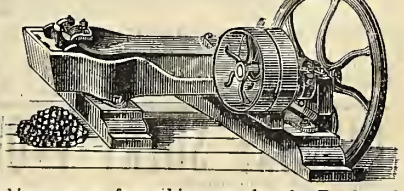

This machine takes a lump of limestone or any other mineral 3 to 5 inches square, and crushes it and pulverizes it at one motion to any required fineness **without the use of burr stones or rollers.** Farmers drill it or sow it just as it comes from the machine. After six years' trial, ground **Raw Limestone** has been found to be worth three times as much as **Burnt Lime**, and with this machine it does not cost one-half as much to make. While Phosphate, Bone Dust and other Fertilizers must be renewed every one or two years, by actual trial **Ground Raw Limestone** will last four years. By burning LIME you destroy 40 per cent of carbonic acid, which is **PLANT FOOD.** An analysis of the Virgin Soil Blue Grass Region, Kentucky, shows 2,464 carbonate of lime, 0,319 phosphoric acid, or in other words, Nature uses EIGHT TIMES as much GROUND RAW LIMESTONE as Phosphates or Bone Dust in making good lands. Any farm hand can run the machine. It is remarkably **SIMPLE** and **DURABLE,** and is ready to attach to any kind of power as we ship it. The same machine answers for making macadam for Roads and Ballast for Railroads, by simply changing Dies. ONE, THREE and FIVE-HORSE-POWER. Price **$190, $390,** and **$570.** Address,

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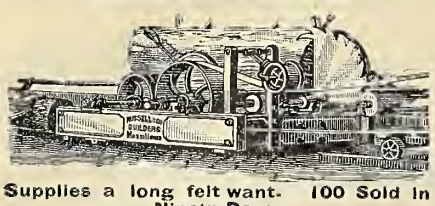

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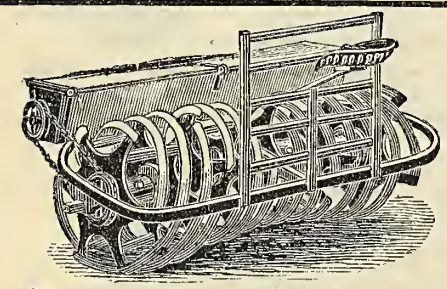

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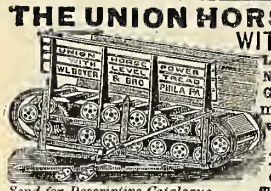

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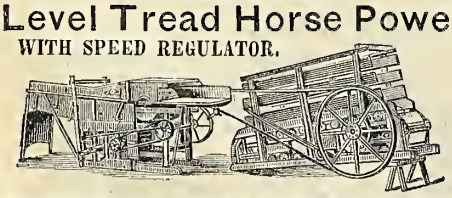

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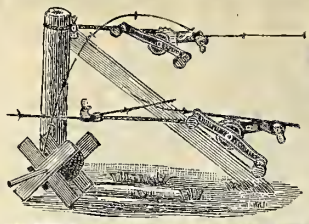

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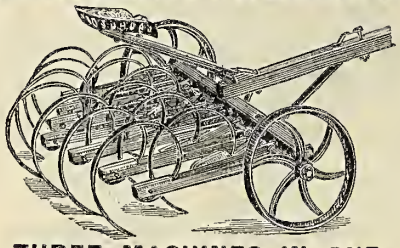

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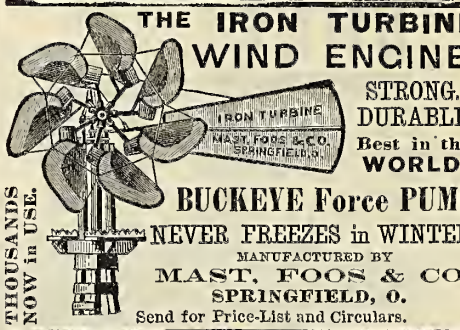

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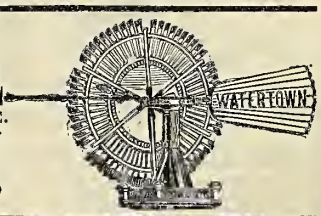

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It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.

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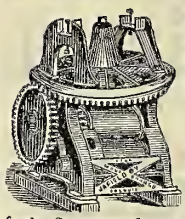

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Has greater capacity. Saves half the labor. A boy can operate it. Saves fuel. Syrup made on it brings a higher price in market. Don't fail to investigate its merits before ordering. Send for circular to

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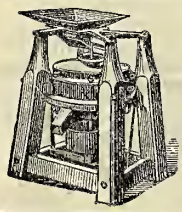

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10,000 IN USE.

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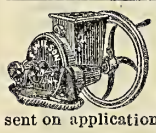

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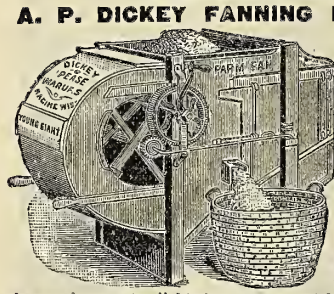

Have no equal. They obtained the highest award at the Centennial in 1876, and at Paris in 1878. These mills are made in nine sizes, for Farm and Ware-house use (hand or power). Capacity from 50 to 500 bushels per hour. They clean and separate all kinds of Grain and Seed for market; also **grade them for seeding.** They separate Oats and foul seed, such as Cockle, Smut, &c., from Wheat, Barley or Rye; and are specially adapted for cleaning, separating and grading Timothy, Clover, Red-Top, Flax, etc., and clean and **separate** three kinds of Beans at **one operation.** We also make the

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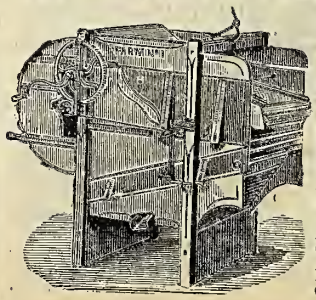

THE BEST MILL IN THE WORLD. It separates Oats, Cockle, and all foul stuff from Wheat. Is also a perfect cleaner of Flax, Timothy, Clover, and all kinds of seeds. The great improvement over other mills is that it has two shoes. It is especially adapted for warehouse use. *Send for Descriptive Circular and Price-List.* Liberal discount to dealers.

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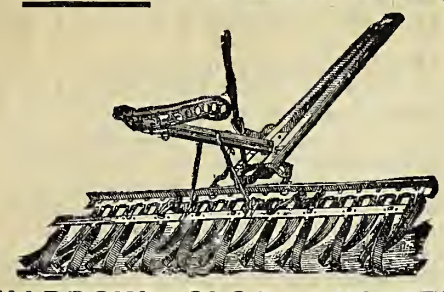

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The "ACME" subjects the soil to the action of a **Crusher** and **Leveler**, and at the same time to the **Cutting, Lifting, Turning** process of double rows of **Steel Coulters**, the peculiar shape and arrangement of which gives **immense cutting power.** The **entire absence of Spikes or Spring Teeth** avoids pulling up and scattering of rubbish. It is **especially adapted** to inverted sod, hard clay and "slough land," where other Harrows utterly fail, and also works perfectly on light soil.

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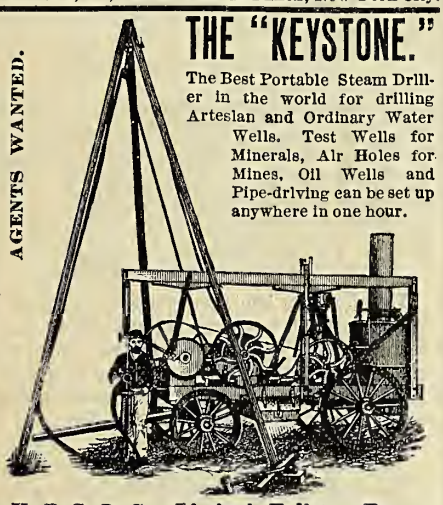

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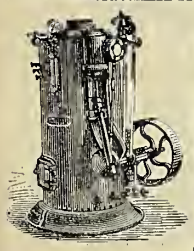

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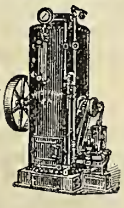

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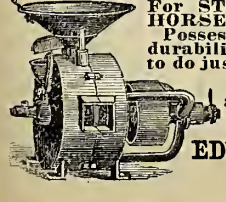

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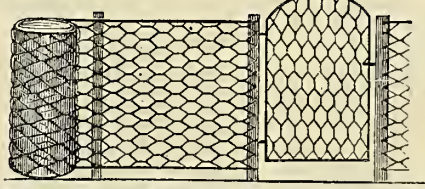
Sedgwick Steel Wire Fence.



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Mention this paper. **Richmond, Ind.**

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In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

Read the Advertising Columns.—Letters are daily received by the Editors, asking where pigs, fowls, seeds, fertilizers, machinery, etc., can be procured. We consider all the information of this kind that is given in the advertising pages sufficient, if those needing anything will only look there; we can not find room to repeat what is already plainly told elsewhere. Every page of the *American Agriculturist*, including the covers, is interesting reading, and should all be carefully examined every month. In addition to looking after what one may want, the reading of what others have to say, in offering their wares, etc., starts up some new idea in the mind of the reader.—When writing to any advertiser, always tell him in what paper his advertisement was seen.

Milk and Butter in Florida.—"W. L. H." writes us from Ocala that there is no wonder that the native cows are unprodnctive, as they are never fed, and are milked but once a day, and that at no regular hour. He has no doubt that good cows, properly cared for, will give good returns.

Shore Days.—In parts of New England the old custom of passing a day at the shore is still observed. It is in reality a neighborhood pic-nic, the party being made up of several families living within reach of salt water. The day, usually one of the present month, is fixed upon long beforehand, and great preparations are made for it. On the day an early start is made, and at length the long caravan reaches salt water. We have been with some of these shore parties, and think we never saw happier people. Bathing, fishing, and above all the digging of clams occupy the party, and such times in cooking and in eating "shore fare"! Of course only a small share of our readers can reach the sea-coast, but quite as much enjoyment can be had elsewhere. Make a holiday; go somewhere, and do something (if only by doing nothing), outside of the daily routine, and each one will return home, if a little tired, all the better for such a holiday. We believe in farmers' frolics, provided the whole family take part in them.

Sulphur and Ants.—Jas. Dunlop, of Dakota Territory, writes us, that when living in Ceylon, he was engaged on some experiments with Sulphur on the diseased Coffee plants. On coming across a large ants' nest, he stirred up the inmates and dusted them liberally with the Sulphur, merely as a matter of curiosity. On passing the place a few days after, he could find no ants at the nest, nor could he find one near. He thinks the experiment worth trying with ants in the Lawn. Should we be troubled with ants in the Lawn, we would try Bisulphide of Carbon, which is found by careful and thorough experiments to be a powerful insecticide.

A Use for Pussley.—"A Farmer's Daughter," writes us from Newburyport Mass., that she has been much interested in what we said in July last, about "Pussley," or Purslane. She says that, having a large quantity of the plant, she concluded to try it as a food for cows. The weed was pulled, and half a bushel was given to each cow every night after milking. It was eaten readily, the cows seeming to be very fond of it, and a large increase in the flow of milk was the result. The experience of the first year was so beneficial, that its use has been continued with good effect. When we know more about "Pussley," it will not be regarded as altogether bad.

Interesting Census Items.

In addition to the numerous items relating specially to Agriculture given on pages 328, 329, and 330, we have prepared in epitomized form the following, which are interesting and serve for reference:

How Much is "Uncle Sam" Worth?—We talk very glibly about Millions, and Millionaires, but how few can really think of and comprehend a million—a Million Dollars for example. We can easily grasp a gold or silver or greenback dollar, and carry in mind five, fifty, a hundred, five hundred of them, and by a little effort work up a conception of five to ten hundred, or even ten thousand. But a hundred times $10,000, that is a million, is more than any one can really grasp in a whole hour's earnest thought.—Lay one-dollar greenbacks out in a line, and one million of these would stretch away 115 miles.—Well, it takes a thousand millions to make one *Billion;* and so a single billion of bills would extend 115,000 miles, or four and three-fifths times around the world!—But the Census reports the *assessed* value of the real and personal property in the United States, two years ago, at nearly *Seventeen Billion* Dollars ($16,902,755,893). And every one knows that the assessed value is less than half the actual value. Calling it half, we have for Uncle Sam's property, real and personal, in 1880, about Thirty-five Billion Dollars! Here are the official figures:

	1880.	1870.	1860.
Assessed Value..	$16,902,755,893	$14,178,986,732	$12,084,560,005
Calculated Value.	33,805,511,796	28,357,973,464	24,169,120,010

The valuation in 1870 was upon an inflated currency of paper money. In 1860 and 1880 it was on a gold basis. Comparing 1860 and 1880, we have in 20 years gained nearly 10 billions ($9,636,391,781), which is nearly 500 millions ($481,819,589) a year; or in round numbers, $1,320,000 for every day, Sundays included; or $55,000 for each hour, day and night; or $916⅔ for every minute. This is the average for every minute, day, night, and Sundays, during 20 years past; and the property of our country is now probably increasing at the rate of $1,200 a minute, or $20 a second!

What People are Doing.—Hon. Jno. W. Shackelford, of N. C., in a recent speech in Congress, gave the following items from gleanings at the Census Bureau, etc.: Total *working force* of the country estimated at 15,000,000, divided thus: Engaged in Agriculture, 7,050,000 (47 per cent.); in Professional and Personal Service, 3,300,000 (22 per cent); in Manufacturing, Mining and Mechanical Work, 3,300,000 (22 per cent); in Trade and Transportation, 1,350,000 (9 per cent).

How Much Tobacco Do We Grow?—The last Census figures report 473,107,573 lbs., or nearly 9½ lbs. for every inhabitant, young and old. But it is not all consumed here, for a large amount is exported. Probably most people would name Virginia as the largest grower of Tobacco, but Kentucky much more than doubles her, as follows:

States.	Lbs.[1]	Acres.	Lbs. per Acre	States.	Lbs.	Acres	Lbs. per Acre
Ky...	171,121,134	226,127	756	Mo ..	11,994,077	15,500	773
Va...	80,099,838	139,423	573	Wis .	10,878,463	8,811	1,234
Penn	36,957,772	27,567	1,340	Ind..	8,872,842	11,955	742
Ohio.	34,725,405	34,679	1,001	N. Y.	6,553,351	4,938	1,327
Tenn	29,365,052	41,532	707	Mass.	5,369,436	3,358	1,599
N. C.	26,986,448	57,215	471	Ill....	3,936,700	5,625	699
Md..	26,082,147	38,174	683	W.V.	2,296,146	4,071	564
Conn	14,044,652	8,666	1,620				
Total,	469,283,463 lbs.;			627,641 Acres; Average, 748 lbs.			

Kentucky grows over one-third (36 per cent) of the entire Tobacco crop of the country, and the above 15 States supply 99 lbs. out of every 100 lbs. grown; 22 other States and Territories report a small amount,—together only one per cent. The yield varies all the way from 471 lbs. per acre in North Carolina, to 1,620 lbs. per acre in Connecticut, in which State fertilizers are largely used.

California Wheat versus Gold and Silver.—In Mr. Shackelford's speech we find it stated that during ten years, 1871–1880 (inclusive), California yielded of gold and silver $186,506,249; and in the same time 278,908,000 bushels of wheat, valued at $318,231,046, or almost double that of gold.

What Cold and Heat Do People Have?—Both long-continued great heat or severe cold affect the health and vigor of people. The most active, enterprising, vigorous people, are found where a pretty uniform, medium low temperature is maintained. The mean annual temperature is the average hight of Fahrenheit's thermometer throughout the year, and during a long series of years, taking into account all hours of day and night, and all seasons of the year. The mean annual temperature of the whole country (excluding Alaska,) is about **53°** Fahr. The following table shows what mean temperature our fifty millions of people enjoy or suffer:

Inhabitants.	Mean Heat.	Per Cent.	Inhabitants.	Mean Heat.	Per Cent.
15,795,961	50° to 55°	31	3,292,756	65° to 70°	7
15,022,538	45° to 50°	30	421,992	70° to 75°	1
6,649,672	55° to 60°	13	273,581	below 40°	1
5,188,039	60° to 65°	10	11,061	above 75°	.01
3,497,266	40° to 45°	7			

Ninety-eight out of every one hundred live where the mean is between 40° and 70°.—The entire Cotton region has a mean above 55°, and none below 35° mean; the Sugar and Rice regions above 70°, and none below 50° mean; and most of the Tobacco region between 50° and 60°. The Prairie regions of the Mississippi Valley is mostly below 55°; and the great Wheat region of Minnesota and Dakota below 40° mean annual temperature, with a mid-winter temperature below 10°. The hottest region is Southern Florida, next to which is Southern Texas and Southwestern Arizona.

COLD WINTER.—MEAN TEMPERATURE OF JANUARY.

People.	Per Cent.	Mean.	People.	Per Cent.	Mean.
10,293,282 or	20	20° to 25°	1,822,495 or	4	50° to 55°
10,145,933 or	20	30° to 35°	1,759,721 or	4	10° to 15°
9,154,459 or	18	25° to 30°	455,775 or	1	55° to 60°
5,611,406 or	11	35° to 40°	266,041 or	½	5° to 10°
3,586,537 or	7	40° to 45°	50,078	—	below 5°
3,494,352 or	7	45° to 50°	24,930	—	60° to 65°
3,482,366 or	7	15° to 20°	5,491	—	above 65°

How High Up the People Live.—Among the curiosities of the Census is, "The hight above the sea level that the masses of people live?"

Number.	Above Sea Level.
19,025,617 live over.....	500 and under 1,000 feet.
10,775,250 live over.....	100 and under 500 feet.
9,152,003 live over.....	level and under 100 feet.
7,903,811 live over.....	1,000 and under 1,500 feet.
1,876,885 live over.....	1,500 and under 2,000 feet.
664,851 live over.....	2,000 and under 3,000 feet.
271,321 live over.....	5,000 and under 6,000 feet.
166,545 live over.....	4,000 and under 5,000 feet.
128,348 live over.....	3,000 and under 4,000 feet.
94,989 live over.....	6,000 and under 7,000 feet.
26,846 live over.....	9,000 and under 10,000 feet.
26,400 live over.	10,000 and up to highest point.
24,947 live over.....	8,000 and under 9,000 feet.
15,053 live over.....	7,000 and under 8,000 feet.

Pretty cold for the 53,246 people living above 9,000 feet high, and especially for the 26,400 living above 10,000 feet high!—As 5,280 feet equal a mile, there are 459,556 people living about a mile high and upward.—The *average* hight above the sea level that *all* the inhabitants live is 700 feet.

How Much Rain do People Get in a Year?—The average annual Rainfall of the United States (excluding Alaska,) is 29 inches.—Every inch of rainfall upon an acre equals 27,154 gallons, or 862 barrels; and the average fall, of 29 inches, is about 25,000 barrels (of 31½ gallons) to the acre.

People.	Rainfall.	Population to Square Mile.
12,754,479 have	45 to 50 inches	57.7
11,357,292 have	40 to 45 inches	40.1
10,057,170 have	35 to 40 inches	38.6
4,993,336 have	30 to 35 inches	23.
4,311,502 have	50 to 55 inches	22.1
2,813,866 have	55 to 60 inches	19.7
1,179,136 have	25 to 30 inches	8.7
855,680 have	over 60 inches	12.4
829,340 have	20 to 25 inches	3.8
537,323 have	15 to 20 inches	1.3
309,438 have	10 to 15 inches	0.4
154,304 have	under 10 inches	0.3

It will be noted that over 46,000,000 people, or over nine-tenths of all (92 per cent), have more than the average fall of rain. In the region having 45 to 50 inches of rainfall, the population averages 57¾ people to the square mile, and 40 to the square mile where the fall is 40 to 45 inches. But few, (less than 1½ to the square mile), live where less than an average of 20 inches of rain falls annually.

The Center of Population.—Place for a "Convention."—If all the inhabitants of the United States were called together at a point, to reach which would require the least aggregate amount of travel, they would go to Kentucky, on its northern border, one mile south of the Ohio River, 8 miles west of and 2 miles south of the center of the City of Cincinnati. The point is 1¼ miles southeast of the village of Taylorsville, Ky. This is according to Census of 1880, but so many people have settled in the Northwest, the central point to-day is 15 to 20 miles further west, and a little further north, perhaps in the Ohio River as it bends northwest from Taylorsville.—The meaning of this Center of Population is, that if all the 50,155,783 people were standing on a platform covering the country, and all were of equal weight, that platform would just balance if it rested on a supporting point at the place indicated, which is latitude 39° 04′ 8″, and longitude 84° 39′ 40″.—The rapidity with which "Westward the Star of Empire takes its way," is shown by the fact that

THE CENTER OF POPULATION WAS:

	Moved West in ten Years.
In 1790—23 miles East of Baltimore.	
In 1800—18 miles West of Baltimore.....	41 miles.
In 1810—40 miles West by N. of Washington...	36 miles,
In 1820—16 miles North of Woodstock, Va	50 miles.
In 1830—19 miles Southwest of Moorefield.....	39 miles.
In 1840—16 miles South of Clarksburg.....	55 miles.
In 1850—23 miles Southeast of Parkersburg....	55 miles.
In 1860—20 miles South of Chillicothe, Ohio...	81 miles.
In 1870—48 miles Easterly from Cincinnati.....	42 miles.
In 1880— 8 miles Westerly from Cincinnati....	58 miles.
Average yearly movement, 5 and 7-9ths miles.	

This line has kept very close to the parallel of latitude 39°, the greatest variation from this line being about 16 miles north in 1800, and about 2 miles south in 1830. At the present ratio of settlement, West, Northwest, and Southwest, this center will be well on towards the Mississippi in 1890.

Men Old Enough to Vote.—(The Country's "Working and Fighting Force.") In February *American Agriculturist* we gave the entire population (50,155,783), the males (25,518,820), the females, and other items from the Census of 1880, both for the whole country and by States. The details just made up show there were **12,830,349** men **21** years old and upward. This makes the grown men just about one-half of all the males (50¼ per cent), and one-quarter (25.57 per cent) of the whole population. But all these are not qualified to "vote," except by age, as the number includes 8,270,513 native 'whites"; 3,072,487 foreign born whites; and 1,487,344 "colored" men, Indians, Chinese, and Japanese.

STATES WITH OVER 250,000 GROWN MEN.

N. York.	1,408,751	Michigan..	467,687	California	329,392
Penn....	1,094,284	Iowa,....	416,658	Georgia....	321,438
Ohio. ..	826,577	Texas.....	380,376	N. Jersey..	300,635
Illinois...	796,847	Ky.....	376,221	N. Car....	294,750
Missouri.	541,207	Wis	340,482	Kansas....	265,714
Mass	502,648	Va.....	334,505	Alabama ..	259,884
Indiana..	498,437	Tenn. ..	330,305		
Total in 20 *States*, (nearly 80 per cent).....					10,086,798

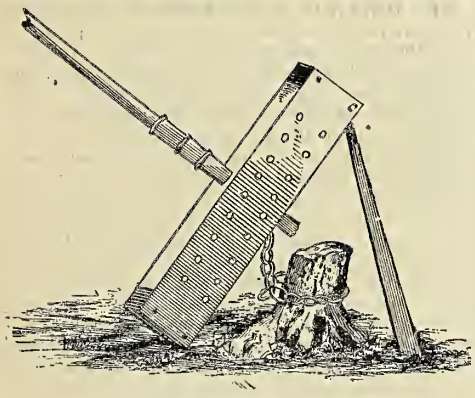
The curious will note that three States, New York, Pennsylvania, and Ohio, have over a quarter (26 per cent) of all the full-grown men in the country; that the first nine have over half (52 per cent); and the first fifteen have about 70 per cent.

6,211 Plow Patents.—The amount of attention devoted to improving the Plow, including Cultivators which are in one respect Plows, as they do similar work, is shown by the fact that 6,211 Patents have been issued for invention or improvement of this main farm implement, prior to this year. They are divided into 33 subclasses thus: Attachments, 38; Beams, 35; Cleaners, 63; Clevises, 162; Corn Coverers, 21; Coulters, 120; Couplings, 54; Cotton Choppers, 173; Cotton Scrapers, 47; Cultivators, 752; Parallel Cultivators, 82; Rotary Cultivators, 163; Straddle-row Cultivators, 114; Wheel Cultivators, 1,019; Teeth Cultivators, 171; Fenders, 95; Handles, 19; Landsides, 21; Mold-boards, 76; Plows, 686; Ditching Plows, 122; Hand Plows, 121; Mole Plows, 105; Shovel Plows, 307; Sidehill Plows, 146; Steam Plows, 159; Wheel Plows, 1,005; Points, 82; Revolving Moldboards, 44; Ridgers, 21; Standards, 27: Subsoilers, 123; Weed-turners, 38—a total of over six thousand!

A Stump Puller.

Mr. Irving Tyler, Tompkins County, N. Y., writes us: "I am a farmer's son, and therefore interested in the *American Agriculturist*. I send a model and description of an implement for pulling stumps, roots, and for lifting heavy logs or other heavy weights. It is called the "Samson Lever," and is constructed as follows:

The side pieces are of tough oak or elm, 1½ inch thick, 7 inches wide, and 7 feet long. Draw two lines, 3 inches apart, lengthwise of the planks, and fasten the two together, that both may be bored alike with a 1½-inch auger, beginning about 8 inches from the foot, and boring so that the holes will be 3 inches from center to center, until one row is bored. Bore the other row in the like manner, with the first hole exactly midway between the first and second holes on the other side. Two blocks, 3 inches thick, 7 inches long, and 4 inches wide, are placed between the two side-pieces at the ends, and bolted with ½-inch bolts. The blocks should be let in the side-pieces ½ of an inch, to prevent the blocks from splitting. Bore a large hole in the top block to admit the brace prop. There should be two iron pins of inch iron, 8 inches long, to go through the side-pieces and support the lever. The lever should be 6 feet long, the wood part 5 feet long, with 3 iron bands on the end to prevent splitting. The iron in the end of



A "SAMSON LEVER" OR STUMP PULLER.

the lever is 20 inches long, ¾ of an inch thick, and 2 inches wide, with two notches in the lower side to fit over the pins, and a hole punched midway between these notches to receive a hook. Drive this iron in the end of the wooden lever 8 inches, and then your "Samson" is finished. The working of this implement will be plainly seen by the model and the drawing which I enclose."

Notes on Foods.

In selecting our supplies of food, it is very proper to consider which will give us the most nutriment for the money. The lumbermen who go into the forest, where they will have hard work during a long and severe winter, do not consult the books that show the composition of food. Experience has shown them that, as a main reliance, as a food that, in their rough language, will "stick to the ribs," which is another way of expressing flesh formers, there is nothing equal to

PORK AND BEANS.—No chemical analysis could lead to a better combination. In the beans the flesh formers are in large proportion to the heat producers, and as an abundance of both are needed, the fat of pork is added as a heat producer. We have not the data from which to make an accurate estimate, but have no doubt that for those who take active exercise in any occupation, the wastes of the body may be more economically supplied by this generally palatable food than by any other. Those who have not eaten pork and beans in a lumber camp, can have no idea of this food in its most perfect condition. The beans are first boiled, then placed in an iron pot which is covered. A hole is made in the ground, and a fire built there; when this fire has burned to coals, the pot is set in, and the whole, pot and coals, covered with earth. This is done in the evening, and the pot is uncovered and taken out at breakfast time the next morning. No wonder that the lumbermen are the sturdy fellows that they are!

PEA-SOUP.—A pound of peas will make a gallon of soup. The peas should be washed and soaked in cold water over night, then be cooked in five pints of water, with gentle simmering. A pound of beef or a ham-bone may be boiled with the peas; for seasoning, add an onion with a few cloves stuck in it, salt to taste, and about forty whole grains of pepper. An ounce or two of sugar will add greatly to the richness of this, as it does to almost all soups. At the end of three hours' simmering, pass the soup through a wire sieve or colander, with the aid of a potato-masher. Fry brown some squares of stale bread in lard or drippings, and add just before serving, or serve these *croutons*, as they are called, separately, to be added at pleasure. Bean-soup may be made in a similar manner.

Inconsistencies in Laws for the Supression of Contagious Diseases in Cattle.

BY PROF. JAMES LAW, OF CORNELL UNIVERSITY.

"The glorious Uncertainty of the Law" seems to have been known and appreciated in all ages, but the genuine inconsistency and even absurdity of many existing statutes are little appreciated by the bulk of the community. The equivocal wording of some statutes and the conflict of precedents by which their meaning is explained, are best known to the practising attorney, who often reaps a golden harvest from the acknowledged uncertainty, and the doubt that must attach as to the prospective verdict. But aside from laws that are doubtful in their meaning, there are others which place an administration in a position which is at once inequitable, inconsistent, and subversive of their alleged object. In no department of legislation, perhaps, can more striking instances of this be obtained than in the enactments for the suppression of contagious diseases in live stock. One or two instances of this kind may here be noted, and to show that the representative of a Republic enjoys no monopoly of this legislation, a beginning may be made with an Empire of the Old World.

British Veterinary Sanitary Laws.

After a long and sad experience of ruinous losses from the importation of cattle diseases that are not native to the soil, England, under the Cattle Diseases Act of 1869, ordered that all cattle landed from certain infected countries of Europe should be slaughtered in enclosures provided for the purpose at the several ports of landing within ten days after arrival. In 1878 this order was extended so as to embrace all cattle coming from the United States of America. The step was a wise one, and must remain unimpeachable so long as the several prescribed countries retain dangerous cattle plagues within their limits.

But such legislation demands as a corollary that the proscription of countries shall be coextensive with the existence of these cattle plagues in the countries in question, and that the movement and sale of herds that have been exposed to infection in England itself shall be prohibited with a corresponding rigor. Now what are the facts?

Ireland, the first portion of the British Isles to be infected with Lung Plague (contagious Pleuropneumonia), and the portion which has since been the most extensively infected, is allowed to ship her herds to any English port with but a cursory and necessarily imperfect port inspection. In view of this the Professional Officer says in his report to the Privy Council, 1877:

"Animals from Ireland can, under existing arrangements, be landed at any part of the coast. It is true that the Privy Council may make regulations for the detention and inspection of Irish stock, whenever it may be landed, but the idea of dealing with animals from Ireland in a manner so exceptional had not been entertained. * * * Inspection of Irish stock, as at present conducted, gives rise to impressions which are fallacious. The fact of a system of inspection having been established, naturally suggested the idea of restictions being imposed on the movement of diseased and infected animals, whereas no restrictions are enforced, except in a few instances when the local authorities have taken action on the reports of the Privy Council inspectors. The results of the present system may indeed be summed up in a few words; a certain number of diseased animals are detected by the inspectors during an examination which is necessarily imperfect, and the local authorities receive information which enables them to act, if they are so disposed, but it must be added that the information frequently arrives too late to be of any use, and in case the authorities could obtain such information, if they desire to base an action upon it, more promptly by directing their own inspectors to attend at the wharves where Irish animals are landed, and with all the necessary powers to detain diseased animals, and regulate the movement of those that had been herded with them."

Here it is evident:

1st. The cattle from an infected country are excepted in the general order for slaughter, and are admitted to spread the infection in Great Britain.

2d. The only inspection of such cattle is made at the port of landing, and therefore cannot detect all cases of a disease which, like Lung Plague, has a period of incubation (from the actual infection to the first symptom of disease), of from two to fourteen weeks.

3d. When this confessedly "imperfect" inspection succeeds in detecting disease, the local authorities must be apprized in order to the detentiou of the stock, and usually the cattle have been carried on before their order can be issued.

The condition of the internal cattle trade in Ireland, and the facilities for infection, may be judged from the following extracts from the report of the Director of the Irish Privy Council Vet. Department:

"Animals exported from Ireland are very seldom bred by their exporters, and often, before exportation, pass through several hands from those of the breeders to those of the final purchasers, for exportation to Great Britain.

"The changes of ownership are more frequent with respect to cattle, than with respect to sheep and swine. With each change of ownership there is generally a change of locality, and the movement entailed thereby, as well as the exposure in public fairs and markets, and on lands and premises used as temporary resting places for animals in transit, *subject them more or less to diseases of a contagious or infectious nature*, particularly foot and mouth distemper, when that malady is prevalent.

"In Ireland weanling and more advanced calves are purchased throughout the country from the rearers, who are not always their breeders, by persons who either deal in or prepare store stock, and when a sufficient number is collected, are kept by them frequently on different pastures, hired but for the grazing season, changing the locality as emergencies require, either for termination of tenancy, inclemency of season, deficiency of food, for the sake of convenience, or for other causes.

"Such pastures, many of which are mountainous and occupy large tracts, are in many cases grazed by cattle belonging to many different persons, who pay by the head for the summer grazing of their animals. The owners of these cattle, who often reside in a different part of the country, or out of it, or are engaged elsewhere in another branch of the cattle trade, or are travelling about, frequently do not see them nor have them visited until the termination of the grazing season, when the animals are removed to other localities more favorable for the time of the year, there perhaps to meet with other lots, belonging to the same or different owners, which have been brought from different parts of the country for the same reasons.

"These animals in due time are brought in assorted lots to public fairs and markets, where they are generally sold for the purpose of being further matured; and when matured they are again brought into the market, and resold as early stores."

The Director goes on to describe a similar series of changes of hands, exposures in public markets to thousands of cattle collected from all quarters, and of changes of pasturage on common ranges where they are admitted at so much per head, extending over the second and third years, when they are shipped to England fat, if they have not been disposed of sooner for store cattle. He adds: "*Many of the Dublin dairy proprietors are extensive cattle dealers, particularly for exportation.*"

Now no condition of things could prove more favorable to the propagation of a contagious disease than this incessant change of hands, of place, and of pasture, this frequent aggregation of cattle from all sources and an open market, this successive detention of different herds on the same resting

grounds, or in the same buildings, and this pasturage in common of herds on an open range.

These conditions are closely allied to those which have perpetuated the Lung Plague from time immemorial on the open steppes of Europe and Asia, and on the mountain ranges of Central Europe, and which in more recent times have enabled it to defy all attempts for its extinction on the open ranges of Australia, New Zealand, and South Africa. Similar conditions operate around our own infected cities in the East, and the plague can never be extirpated until these are abolished.

Can it be wondered that Ireland has been an especial home of this bovine plague for over forty years? And can it be credited that England, so stringent with regard to the exclusion of infection from other countries, should continue to welcome the imports of plague-stricken Ireland?

A second blunder, no less grossly absurd is found in the order regulating the internal cattle traffic of England. "The Diseased Animals (in transit), Order of 1878," enjoins concerning cattle:

"1.—While exposed for sale or exhibited in a market, fair, sale-yard, place of exhibition, or other place; or

"2.—While placed in a lair or other place before exposure for sale; or

"3.—While being in or on a landing place or wharf or other place during transit, or while in course of being moved by land or by water; or

"4.—While being on common or uninclosed land; or generally

"5.—While being in a place not in the possession or occupation, or under the control of the owner of the animal."

"*A.*—PLEURO-PNEUMONIA.

"(*a*)—When Pleuro-pneumonia is found to exist the Inspector of the Local Authority shall seize and detain all the *diseased* cattle."

"(*b*)—The *diseased* cattle so detained shall, if not slaughtered in the place where they are seized, be moved to the nearest available slaughter-house with the license of the Inspector; and that license shall be in force for twelve hours, and no longer, and shall specify the slaughter-house to which the cattle are to be moved for slaughter; and they shall be there slaughtered in accordance with the Act of 1878."

* * *

"And the following regulations shall apply in case of

"*C.*—ANIMALS NOT DISEASED."

(*c*)—All animals in the market or other place referred to in this Article, other than the diseased animals so seized, may be moved in all respects as if no disease had been found in that market or other place."

Is it credible that legislators so strenuous to suppress a *contagion* that they enjoin the summary slaughter of all cattle from infected countries, should thus deliberately allow the free sale and removal of the still apparently healthy cattle, taken from a diseased herd, and which have been actually exposed to infection and have, presumably, become infected? No wonder that the process of extinguishing this bovine plague in Great Britain has been a slow, and an expensive one.

Maccaroni—A Good Food.—In the scarcity of vegetables, and as vastly more nutritious than potatoes, Maccaroni makes an acceptable variety. It is somewhat strange that this nutritious food is little known outside of hotels and restaurants. Ordinary wheat contains 69 percent of heat-producers, and 11 per cent of flesh-formers. Certain varieties of wheat grown in Italy, have a much larger percentage of flesh-formers (we cannot give the exact figures,) which fit it for the production of Maccaroni. The wheat is ground, the flour is made into a paste with water, and by a machine is squeezed out in the form of tubes, like enormous pipe-stems. Maccaroni contains so much gluten (a flesh-former,) that it may be cooked without falling apart. It is cooked by breaking into convenient lengths, washed, and dropping into boiling water, seasoned with salt, and cooking until tender. It makes an excellent breakfast dish if dressed with a cream sauce, the same as for milk toast. For dinner, boil in salted water until done; place in a pudding dish, distributing grated cheese among the layers, seasoning with salt and pepper, and adding a few bits of butter at top, place the dish into the oven, until the top is brown. Any firm cheese, hard enough to grate, will answer, and about a quarter of a pound is required to half a pound of Maccaroni before boiling. The addition of cheese makes a dish about as rich in flesh-forming materials, as the same quantity of meat.

A Barrel Header.

The accompanying engraving shows a useful contrivance for pressing in the heads of barrels. Fruit and eggs require to be firmly packed to bear transportation with safety. Eggs properly packed, with an inch of chaff or oats between the layer of eggs, can be properly compressed without injury; in fact, without this needed pressure they will often suffer damage.

The Header consists of a bar of ½-inch iron with a loop at one end and two diverging hooks at the other to grasp the bottom of the barrel. One end of a lever is placed in the loop, with its middle resting on a block placed on the center of the head. A strap or cord with a loop or stirrup is fastened to the other end of the lever. The foot is placed in the stirrup, and the weight of the body brings the head of the barrel down into its place. The hands of the operator are free to put the hoops securely in place.

Where People Die Fastest.—In a Congressional speech, June 28th, advocating the admission of Washington Territory as a State, Hon. Thos. H. Brents gave the figures below as the annual number of Deaths for each 1,000 inhabitants, the average for the whole United States being a trifle over fifteen (**15.09**) per 1,000.—The death rate in some European countries are added for comparison:

	Rate.		Rate.		Rate.
1—D. C.	23.60	19—Vt.	15.12	37—Fla.	11.72
2—N. Mex.	20.37	20—Del.	15.09	38—Nev.	11.67
3—Md.	18.96	21—Penn.	14.92	39—Minn.	11.57
4—Mass.	18.59	22—Conn.	14.74	40—Oregon.	10.67
5—Ark.	18.46	23—Maine.	14.67	41—Wash. T.	10.05
6—N. Y.	17.38	24—Ill.	14.63		
7—R. I.	17.00	25—Ky.	14.39	EUROPE.	
8—Mo.	16.89	26—Ala.	14.20	Hungary	45.00
9—Tenn.	16.80	27—Georgia	13.97	Austria	32.20
10—N. J.	16.33	28—Cal.	13.34	Italy	29.98
11—Va.	16.32	29—Ohio.	13.32	Spain	29.72
12—N. H.	16.09	30—Col.	13.11	Germany	27.21
13—S. Car.	15.80	31—Neb.	13.11	Prussia	25.48
14—Ind.	15.78	32—Miss.	12.89	France.	26.64
15—Texas.	15.54	33—Wisc.	12.17	Netherlands.	23.87
16—La.	15.44	34—Mich.	12.06	Eng. & Wales.	21.83
17—N. Car.	15.39	35—W. Va.	11.99	Denmark.	19.92
18—Kansas.	15.22	36—Iowa.	11.93	Sweden.	19.36

Of course the newer Territories, occupied by strong, vigorous adults, have a lower death rate than where there are many young children; while large cities like New York, Philadelphia, etc., having many emigrants, and with crowded tenements, are affected by these special circumstances.

Sundry 1880 Census Items: In the whole United States, there were: IN COTTON MANUFACTURE, 230,223 Looms; 10,921,147 Spindles, using 1,586,481 bales, and employing 181,628 persons.... IGNORANT PEOPLE, over ten years old, those who could not read, 4,923,451, or nearly 10 per cent; number who could not write, 6,239,958, or 12¼ per cent....GOING TO SCHOOL, 9,781,521 enrolled in public schools, with an average attendance of 5,805,342....SEA-SHORE LINE, including bays, islands, and irregularities of coast: Atlantic Coast, 12,359 miles; Pacific Coast, 3,251 miles; Gulf of Mexico, 5,744 miles; total, 21,354 miles....ANTHRACITE COAL MINED, 28,646,995 tons (of 2,000 lbs.); value at mines, $40,331,981 ($1.47 per ton); yearly average raised each by miner, 454 tons; men and boys employed below ground, 40,754; above ground, 27,485; total, 68,239.—BITUMINOUS COAL, 42,420,581 tons; total Anthracite and Bituminous Coal, 71,067,576 tons; men employed in mining, 170,585 ...Coal mined in 1880 in England, 163,876,000 tons....GLASS MADE: Value, $21,013,464, of which $868,305 was Plate-Glass; $5,047,313 Window-Glass; $9,534,020, Glassware; $5,563,826, Green Glass....IRON ORE IN 1880: Tons produced, 7,971,706, valued at $23,167,007; of which Pennsylvania produced 2,185,675 tons; Michigan, 1,834,712 tons; New York, 1,262,127 tons; New Jersey, 757,372 tons; Ohio, 547,303 tons; Missouri, 386,197 tons; Alabama, 191,676 tons; Virginia, 182,676 tons; Maryland, 139,628 tons; Tennessee, 104,465 tons; 13 other States produced from 91,416 tons, down to 513 tons in Indiana.

Buckwheat as Green Manure.—"C. A. N.," Danville, N. J., having read in the *American Agriculturist* that Buckwheat is used as a green manure, has asked the opinion of "good farmers" as to the effect of such a crop. Some thought it would be a good thing. Others advised him not to do it, "as it would kill the land, and take 10 years to bring it back to a condition to raise crops from." In view of this adverse opinion, Mr. N. asks, "how to prevent deleterious effects when Buckwheat is so used." When the author of the "Natural History of Ireland" came to the chapter on snakes, he wrote, "There are no snakes in Ireland." If there are any who have any land "killed" by the plowing under of a crop of Buckwheat, we should like to see that dead land. We can assure Mr. N. that that part of New Jersey is the only spot on the face of the globe where Buckwheat has that effect. The growth of a crop of Buckwheat can add nothing to the soil, beyond what is already there, save what it takes from the atmosphere. All the agricultural practice of generations is in favor of this use of Buckwheat, and probably those who say that it kills the land, never tried it or ever saw it tried.

The Marianne North Gallery.—The English Horticultural Journals are all aglow with the praises of Miss Marianne North and her munificence. It would appear that this lady is an artist of marked ability, and, what is unusual with artists, abundant means. Having visited every part of the globe, including the United States, especially the Pacific Coast, and painted the characteristic vegetation of every country, with incidental representations of birds, reptiles, and insects, especial attention appears to have been given to economic plants, and characteristic landscape views are made to serve as accessories to the plant portraits. This industrious lady has accumulated some 600 oil paintings; more than that, she has erected, at her own expense in the Royal Gardens at Kew, a Gallery for their preservation and free exhibition, and presents the whole as a free gift to the British nation. Prof. Helmsley has prepared an elaborate catalogue of the pictures, and it is evident from the accounts of the Marianne North Gallery, that it essentially adds to the attractiveness of Kew as the great Botanical Garden of the world.

What are Vetches? asks a subscriber at Middlehurgh, Pa. The Vetch or Tare (*Vicia sativa,*) is a plant closely related to the Pea, and in appearance is much like a Pea in miniature. In Europe it is valued as a forage plant, but the same cause that prevents our making much use of the Pea as a farm crop—our hot climate in summer—renders the Vetch of little use in this country. Those who wish to make a trial of them, can get the seeds of the leading seedsmen, who offer both spring and winter Vetches.

Rushes—Not Grasses.—A correspondent in Bonrhon Co., Kentucky, sends specimens of what he takes to be a Grass, and asks for the name. The plant is not a Grass, but a Rush, a species of *Juncus*. While some of the Rushes have Grass-like leaves, they may be distinguished from the Grasses by an examination of the flower. In the Rushes, the flower is six-parted, while the parts of the flowers in the true Grasses are always in pairs, or are two-parted. But little is known about the economical value of the Rushes. What is known as "Black Grass," and very abundant on the salt marshes of the coast, is not a grass, but a *Juncus* (*J. Gerardi*), and is regarded by those who feed it as of real value; but beyond this marsh species, little is known of the value of the various Rushes as food.

Kentucky Coffee-tree as a Fly Poison.—"W. S. R.," Mason Co., Ky., writes us that the leaves and the beans of the Kentucky Coffee-tree (*Gymnocladus Canadensis*), bruised and mixed with milk, are used in his neighborhood as a fly poison. He writes to inquire if this tree has been used to kill other insects, especially cabbage-worms. We have not been able to find any account of the use of this tree as an insect poison, and our friend's letter is the first intimation that we have had on this subject. The tree is found wild from Western New York and Illinois, southward, and is often cultivated elsewhere as an ornamental tree. If any of our readers can give information as to its use in killing insects of any kind, we hope that they will impart it.

A New Book On Insects.—"The Injurious Insects of the Farm and Garden," by Mary Treat, is now ready. Every cultivator is aware that destructive insects come and go—but more especially come, in a most unexpected manner. A few years ago, our whole cabbage crop was threatened with extermination hy the accidental importation of a "Cabbage Worm" from Europe. It is a matter within the experience of most farmers, that, by supplying it with food, the "Potato Bug" has been induced to migrate from its home in Colorado, to the shores of tbe Atlantic, and has left its mark on the way. These invasions of insect enemies are so sudden, that the standard works of a few years ago, usually fail to give any information about the injurious insects of the present day. While we have the excellent works of Harris and Paekard, the farmer and gardener may consult them in vain for information about a recent comer. Indeed, our most useful knowledge as to the insects now most injurious to our crops, is contained in the Reports of Prof. Riley, as the State Entomologist of Missouri, that of the Entomologist of Illinois, in the Bulletins of the American Entomological Commission, and in tbe pages of the American Entomologist. Mrs. Treat has done a good work in gathering the most important of these scattered materials, and in presenting them in a condensed form in the present work. She has also given, in several cases, the results of her own observations. The present work is especially valnable for its abundant illustrations. With insects, a good engraving is far more useful than a detailed description, and in view of this fact, the publishers have introduced illustrations of the insects, in their various stages, wherever it could be done to advantage. The work gives a popular acconnt of those insects most injurious to tbe cultivator, and suggests the best known agents for their extermination. Price $2.00, post-paid.

"The Angora Goat; Its Origin, Culture and Products. Containing the Most Recent Observations of Eminent Breeders. With an Appendix on the Alpaca and its Congeners, or the Wool-bearing Animals of tbe Cordilleras of the Andes. By John L. Hayes, LL.D., Secretary of the National Association of Wool Manufacturers, etc., etc. New York: Orange Judd Company."—The title of this work is so descriptive of its contents, that we have given it as above. When one is investigating a subject, it is a great satisfaction to meet with a work that may be regarded, so to speak, as a land-mark, one that brings up, or, as the popular phrase goes, "posts up" our knowledge to a given point. One who would investigate the Angora Goat has in this work a resumé of all that has gone before, and will he safe in taking this as an exponent of the knowledge up to date on the history of this animal. Besides giving a full account of the Angora and the present status of the breeding of this animal in this country, the matter of the Appendix is full of historical interest, even should it lead to no practical results. There are no doubt many localities on the Atlantic slope, south of Maryland, where the Angora Goat, properly managed, may be profitably introduced, while the far West, from the Rocky Mountains to the Pacific, including Texas, offers many localities especially suited to its profitable breeding, as the evidence cited in this work abnndantly shows. While the profit from its fleece has heretofore sometimes been governed by the caprices of fashion, the animal, notwithstanding, has a permanent value. It can be kept at a minimum of cost, and all accounts agree in asscrting that the flesh, of the young animal at least, is of most excellent quality. Aside from the valne of tbe fleece for certain fabrics, that of the pelt, to be used for trimmings and for making mats, is always considerable, and the skin, when tanned, is adapted to many uses. The value of the Angora as a milk-producing animal should not be overlooked. Col. Watts, of South Carolina, says of a cross from a pure Angora buck upon a common ewe goat: "I have raised a ewe goat that will give four quarts of as good milk as any cow on my plantation. The feed of one of my cows will keep twelve goats." Our conntry, in its wide range from North to South, and from Ocean to Ocean, presents a wonderful variety of situation and climate. We have only to select those animals and plants best suited to particular localities, to reach the highest agricultural prosperity. There are places where the raising of the Angora must be profitable, and the work in qnestion is the best guide to these. The author takes np the subject as one interested in the supply of an important raw material to our increasing manufactures. How competent he is to his task, the present work would be abundant evidence, did not his selection hy the President as one of the Tariff Commission—indeed as its chairman—attest to his repntation as one interested in our prodnctive indnstries. Price $1.50, post-paid.

Weight by Measure.—The rule for estimating dressed weights of live eattle is as follows: Measnre from top of shonlders to root of tail for A in inches, then aronnd the body, back of the fore-legs, for girth also in inches for B. Then A plus the square root of B, divided by 7.238, and multiplied by 14, equals the weight in lbs. of dressed meat. There is an indirect method of getting cubic contents of the carcass, deducting one-half for offal, and taking 62 lbs. as the speeific gravity of the carcass. A square or parallelogramic cow would come ont exact. Inferior cattle must be allowed for as they verge from fat and flesh down to skin and bone. Example: A = 60 inches, B 81 inches; $60 \times 9 = 540 \div 7{,}238 \times 14 = 1{,}044$ lbs.

Artificially Hornless Cattle.—In answer to an inquiry signed "W. G. I.," Newbern, N. C.—A farmer, whose name is forgotten, of one of the southern tier of counties in this State, once told in the office of the *Agriculturist* that he used a white heifer or cow as a leader for his flocks of sheep, which ran in pastures filled with low bnshes, high enongh to prevent the sheep seeing one another at a distance; hence, to prevent the flock breaking up into isolated groups, he and his father before him practised removing the horns from white calves when just pricking through, and always kept a white heifer with the sheep as a rallying point, as soldiers rally to the standard. They had originally a white heifer which was treated in this way, and so were her heifer calves, which generally came white. In the third generation they had two calves upon which no horns developed. The horns were removed hy searing with a hot iron—a cruel practice, but probably safer than to remove by cntting, as there would he less hemorrhage.

Currant-worms.—"H. W.," Miami Co., Ohio, writes with referencc to our directions to kill the worms on Currants and Gooseberries, that he watches for the "small waspish-looking *flies*," and kills tbem wherever he can find them. He then looks for eggs upon the underside of the leaves, and crushes them; then, if he finds pin-holes in the leaves, he knows that there are worms at work, and gathers and burns them, If, after all, some worms appear, he gives them a dose of air-slaked lime while the hushes are wet with dew. His interesting letter shows that he adopts the true method. He first understands the operations of the enemy, and then attacks it as carly as possible. If he can kill a single female fly, he prevents the laying of many eggs.

Sea Kale Forcing.—"W. H. D.," Baltimore, Md., asks if the cultivation and forcing of Sea Kale is carried on in this country as it is in England, where it is practised, and if it is remunerative. Sea Kale is one of the vegetables common in Enrope, that seems to have never become fairly established in this conntry. Those who wish for it, can find it, as they can almost everything that grows, in the New York markets in its season, hnt in very limited quantities. We have never seen the forced Sea Kale offered, but that grown in the open ground is to be had in early spring. There is nothing in our climate to prevent its cultivation here; it simply appears to he a plant that our people do not care for. Probably the abundance of Sprouts, or German Greens, supplies its place. Then the open-air crop comes in at the same time with Asparagus, which is generally preferred. There would no doubt be a limited demand for Sea Kale in our large markets from the Europeans residing in this country.

The European Sparrow.—Every now and then we have an inquiry, nsually from some Western State, abont the English, or European Sparrow. Tbe latest comes from a subscriber at Ada, Tenn., who says that he "is interested in the new comer," and asks us to give an engraving of tbe bird. As long ago as July, 1865, we gave an illustration showing both sexes of this Sparrow. At that time a span-worm was a real pest npon the shade-trees of New York and the neigbboring cities. The introduction of the European Sparrow at once disposed of the "worm," and there was a "boom" in favor of the bird. People in other cities paid high prices for Sparrows, and the hird has been widely distributed. It has made itself thoronghly at home in many places, and most of these would now gladly know how to get rid of it. The Sparrow, while it has in some places been useful in keeping insects in check, has, as a general thing, made itself quite too much at home, and has proved a nuisance. It is a quarrelsome creature, and where it establishes itself, it drives off all other small birds. It increases in numbers rapidly, and if houses are not provided for it, it seeks places in the door-caps and window-caps of honses. If these are of carved stone, the work affords them nesting places, and they repay the hospitality by disfiguring the stone-work with their droppings. The bird has proved to be, on the whole, such an undesirable one, that we would not advise its introduction to any new locality. If insects are troublesome, it will be well to try all other means of destroying them before introducing the Sparrow.

"Willing to Rough It."—"G. H. T.," Pa., asks in what State he had better settle, about homesteads, and wbat are the prospects "out there,"—meaning the West—for a young man who is "willing to rough it." We, for obvious reasons, do not advise where to settle. It is a point upon which each one must choose for himself. We would not incur the responsibility of advising our most intimate friend where to go—much less a stranger. Our correspondent should write to the Department of the Interior, at Washington, D. C., for a copy of the Homestead Law. As to his last question, we do not think that a young man with the spirit implied in the expression, "willing to rough it," can go amiss anywhere in this broad country. It is the true spirit of the pioneer, and it makes little difference to which of tbe Western States he goes; if he can "rough it" for awhile, he will come out all right at last.

Half a Million Bushels a Day!—From the comprehensive tables prepared by Mr. S. H. Grant, Superintendent of the Prodnce Exchange, we figure ont that during six months of 1881, when the canals, railroads, and lake and river navigation, were all in active operation, the delivery of Grain at New York City averaged very nearly half a million bnshels for every working day. To comprehend tbe magnitude of these figures, we may suppose this Grain loaded upon farm wagons, 40 bushels upon each, and a wagon and team occupying a space of fifty feet along a highway. The line would extend 118 miles for a single day's receipts, and for a hundred days only, it would extend 11,800 miles, or more tban three times the distance across the continent, from New York to San Francisco.—During the entire year 1880, the receipts of Grain at New York alone reached the aggregate of 171,776,745 hushels. This, if brought by 40-bushel wagon loads, 50 feet to wagon and team, wonld reqnire over four million loads (4,294,418), and the line extend 40,667 miles, or one and three-fifth times around the globe.

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N. B.—If the man in Lancaster Co., Pa., will send me his address, it will give me great pleasure to give him satisfaction. I received his order and stamps all right; but regret to say have lost his address.

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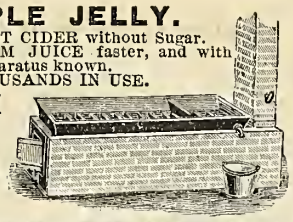

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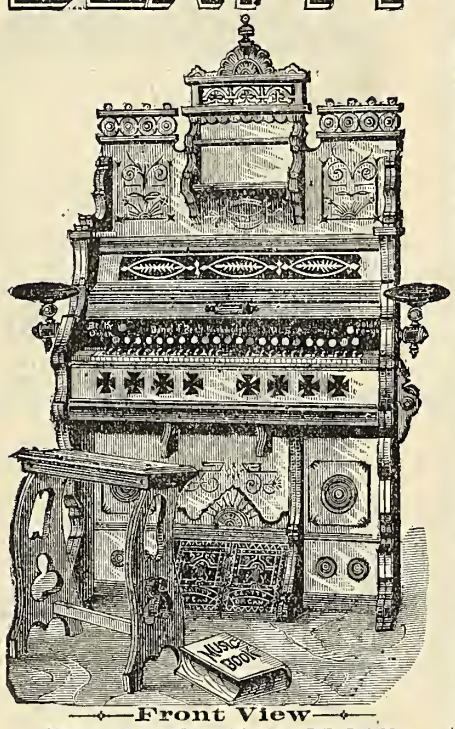

—Front View—

THE BEETHOVEN ORGAN.
Height, 75 ins., Length, 46 ins., Depth, 24 ins.
New Style No. 9000, Handsome Solid Black Walnut Case with Organ Bench and Music Book.
27 STOPS, 10 FULL SETS GOLDEN TONGUE REEDS.

—A BRIEF DESCRIPTION.—

PRICE *Boxed with Organ Bench, Book and Music, ONLY* **$90.00**

CASE.—Handsome Solid Black Walnut, manufactured so as not to take the dirt or dust. Thoroughly seasoned and kiln dried, so that it will stand the test of any climate, handsome rubbed Varnish finish and polish; earved and ornamented with arabesque designs in gold, fret music desk, pocket, handles and lamp stands. It is built to last, not for show.
ACTION.—Containing *27 Stops,* with a great variety of Stop Combinations, enabling the performer to imitate (by following the simple instruetions sent) a Freneh Horn, Violin, Piecolo, Saxaphone, Full Orchestra, Cello, Church Pipe Organ, and many other beautiful effects. In addition you have the regular ordinary Organ at your command.

27 STOPS as follows:

1—Cello, 8 foot tone.
2—Melodia.
3—Clarabella.
4—Manual Sub-Bass, 16 foot tone.
5—Bourdon, 16 foot tone.
6—Saxaphone, 8 foot tone.
7—Viol di Gamba, 8 foot tone
8—Diapason, 8 foot tone.
9—Viola Dolce, 4 foot tone.
10—Grand Expressione, 8 foot tone.
11—French Horn, 8 foot tone.
12—Harp Æolian.
13—Vox Humana, Tremulant.
14—Echo, 8 foot tone.
15—Dulciana, 9 foot tone.
16—Clarionet, 8 foot tone.
17—Voix Celeste, 8 foot tone.
18—Violina, 4 foot tone.
19—Vox Jubilante, 8 and 4 foot tone.
20—Piccolo, 2 foot tone.
21—Coupler Harmonique.
22—Orchestral Forte.
23—Grand Organ Knee Stop.
24—Right Knee Stop.
25—Automatic Valve Stop.
26—Right Duplex Damper.
27—Left Duplex Damper.

With grand and thrilling accessory and combination effects.

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WARRANTED.—The BEETHOVEN is warranted for six years. Shipped on one year's trial.

FACTORY.—Corner Railroad Ave. and Beatty St., Washington, New Jersey. Largest in the world. Running *day and night* to fill all orders promptly

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Very truly yours,

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☞*Be sure to remit by Bank Draft, Post Office Money Order, Registered Letter or Express prepaid*

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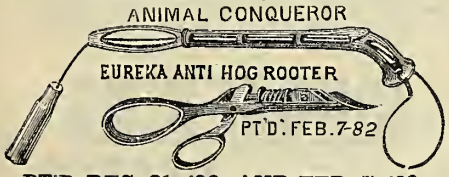

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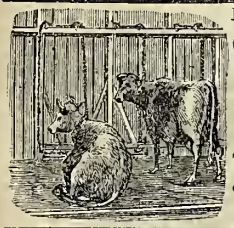

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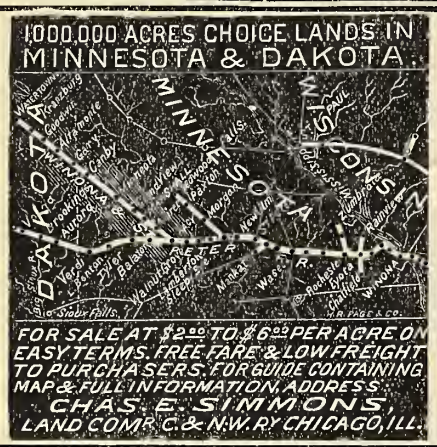

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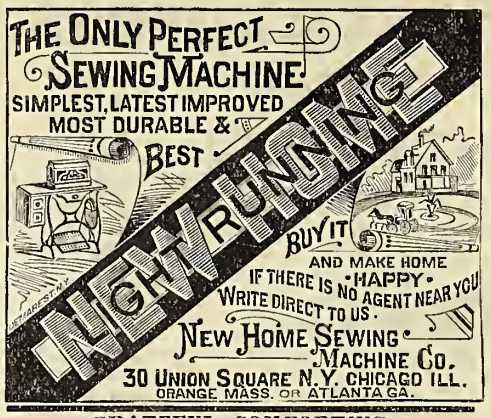

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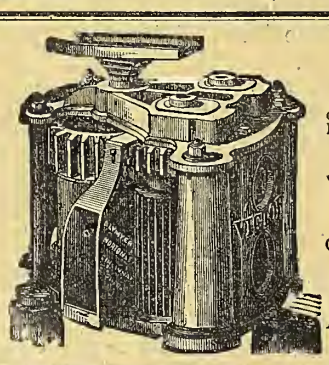

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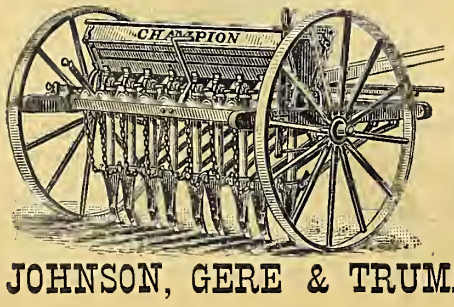

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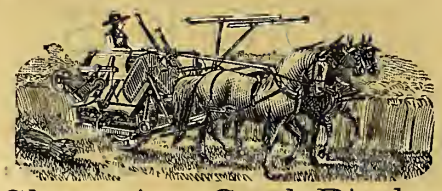

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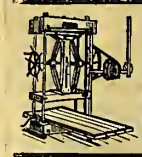

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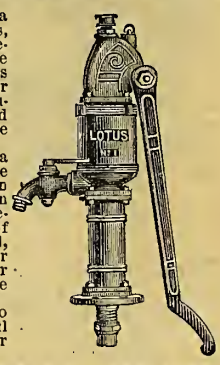

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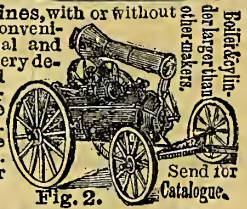

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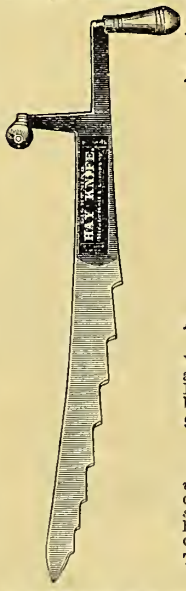

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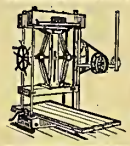

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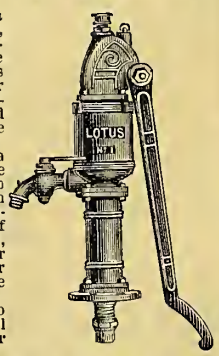

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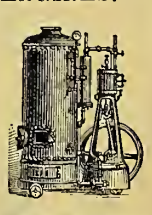

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☞ Free! Free! Free! ☜

Great Improvements begin with the next (October) issue of the *American Agriculturist*, changes which will make the paper more attractive and valuable than ever. Send us the names of any of your neighbors or friends living anywhere in the United States, whom you think would like to see the paper, with a view to subscribing, and we will mail them copies post-free. The October issue will be a grand double autumn number, worth far more than an entire year's subscription price.

See, at once, Special September Notice on Page 388, and Please make the proposition known to Friends and Neighbors in time for them to take advantage of it.

AMERICAN AGRICULTURIST.

NEW YORK, SEPTEMBER, 1882.

Suggestions for the Season.

Trouble in the Clover Stacks.

In some localities, in the older Southern States especially, farmers who put up their clover hay in good condition, are surprised to find, when they come to feed it from the stack or mow, that it is apparently very mouldy, and hesitate to use it. A close examination shows that the appearance of mould is very deceptive, and that the whiteness is really due to great multitudes of silken threads, spun by the clover worm, (*Asopia costalis*,) an insect that has been brought here from the old world, but which makes itself quite at home. The insects are usually found in the greatest numbers at the bottom of the stack, and after it has once established itself, nothing can be done for the hay. The farmer who finds his clover hay in this condition, should not, another season, stack or store his crop in the same place. It has been suggested that placing the stack upon a foundation, that will allow ventilation from below, will be of service.

Work with the Roots.

It will usually pay to go through even broadcast turnips, and thin them, and pull or cut out the strongest weeds—smart-weed, rag-weed, etc., and when roots are in drills, it is absolutely necessary. Even when roots are very backward, and the outlook is discouraging on the first of September, thinning, weeding, and hoeing will make a crop. All kinds of turnips do their best growing after cold nights are, so to speak, the order of the day. Loose earth, and full possession of the ground, are prime requisites to their doing their best.

Buckwheat.

This plant is extremely sensitive to frost. The grain which is already matured, or nearly so, is not hurt, and the straw is not used for feed. The reason why frost is so injurious, may therefore not be apparent, until we think, or notice, that upon almost every plant, we have the seed in every stage of development, from the blossom, to the ripe grain. When cut before frost, a great proportion of the unripe seed will develop perfectly, and the process of ripening does not seem to be hindered by the frost after the Buckwheat is cut.

Go to the Fairs!

The term "Fair" may not always be the most appropriate one for the autumn Shows. *Exhibition* is a better word, but far less frequently used. Not only should the farmer go to the Fair, but he ought to take his family with him. The going, simply, is not enough. All members of the household should make it a point to take something to exhibit. One of the boys may take a fine colt, and if it is his own, there will be all the more pride in obtaining a prize. Another son may have a yoke of steers that he has trained for the exhibition. As for the girls, there are a thousand different things that can be made with the needle that will grace the walls of the "Woman's Pavillion," or the rooms of the Household Department. Even so common a thing as bread may be baked with special care, and will attract much attention. Then there are the garden vegetables, potatoes—a new kind, perhaps—pumpkins, squashes, etc., and the products of the farm and orchard. It is not wise to leave all these things at home, and then criticise the Exhibition because you can say, "We have better things at home." To go and take things to the Fair is not enough. The Exhibition should become a school at which all exhibitors and visitors make a study of the implements, cattle, poultry, fruit, grain, etc., that are there. A farmer may owe his success in growing some crop to the knowledge gained at a town Fair. The farmer that has a real pride in the farm will take great interest in the local Fair, and will exhibit the best products of farm life in the boys and girls, who are interested exhibitors at the Fairs. The day at the Fair should be a social one, every one making it a point to meet many neighbors and others with a pleasant word. It is a place for asking and answering questions, and the person who goes through the Exhibition without opening his mouth, is certainly not getting all the good that is within his reach. It is our advice that all go to the Fair—all take something to show, and all find out as much as possible about all the various exhibits that are made by others. In this way the day at the Fair will be a most profitable one. It may be that a premium will not be taken by every one, but the prize money is only a small part of the value that an exhibitor may receive from a Fair, that has been used as a means for a better understanding of the products of the farm, garden, and household.

Putting Away Tools.

The wearing out of farm implements is, as a rule, due more to neglect than to use. If tools can be well taken care of, it will pay to buy those made of the best steel, and finished in the best manner; but in common hands, and with common care, such are of little advantage. Iron and steel parts should be cleaned with dry sand and a cob, or scraped with a piece of soft iron, washed and oiled if necessary, and in a day or two cleaned off with the corn-cob and dry sand. Finally paint the iron part with rosin and beeswax, in the proportion of 4 of rosin, to 1 of wax, melted together and applied hot. This is good for the iron or steel parts of every sort of tool. Wood work should be painted with good, boiled, linseed oil, white lead and turpentine, colored of any desired tint; red is probably the best color. Keep the cattle away until the paint is dry and hard, or they will lick, with death as the result. If it is not desired to use paint on hand tools, the boiled oil with turpentine and "liquid drier," does just as well. Many prefer to saturate the wood-work of farm implements with crude Petroleum. This can not be used with color, but is applied by itself, so long as any is absorbed by the pores of the wood.

Early Fattening of Animals.

It is quite as important to fatten and market economically, the animal products of the farm, as it is to raise them. A pound of beef, pork, or poultry, can be made much cheaper in September and October, than later in the season, when a larger part of the rations must go to keep up animal heat. There is no sleight of hand in laying fat upon an animal's carcass. It must come out of good honest food in the rations fed. The temperature in the latter part of summer and early autumn, is in favor of the best use of all the fattening articles of food, while there is enough of green food to sharpen the appetite, and keep up good digestion. We have found green corn stalks, especially sweet corn, an excellent article in the stye, to be fed in connection with corn on the cob, and corn meal, and other rations. We have never seen pork made more rapidly than with this kind of feeding. It will be safe to feed all that the swine will eat up clean, and no more. Slack up the feed a little when anything is left in the trough. This will require a little attention, but the pigs will grow so fast, that one can afford to linger by the stye a few minutes, once in a day, to see the fat accumulate. Corn is high this season, and we want to make the best use of it. The best poultrymen we know, begin to give extra feed in September, when they mean to kill in November. The Thanksgiving market is pretty sure to be a good one, and brings ready cash. The small potatoes boiled, and mixed with Indian meal and hot water, make an excellent feed for turkeys and other poultry. This favors growth, as well as fattening. The rations of corn and other grain, unground, may be reserved to the last few weeks of life. Turkeys should have their liberty all through the extra feeding. Some poultrymen shut up their geese and ducks, but we doubt the economy of this method. With a good run,

they will have a greater variety of food, and thrive better with an access to a pasture with pond or brook, while they are receiving full feed for market. All that the fattening animals will eat up clean, is a good rule for the last month of feeding.

Whitewash the Out-Buildings.

There is no more healthful method of keeping the stables, sheds, and pens clean, than to give them a good coat of lime-wash. The wash is easily and quickly made as follows: Slake a bushel of fresh lime in a pork, or other barrel, with water enough to make a thick paste, after which fill up the barrel with hot water, and let it stand for a few hours. This wash may be applied in various ways. It may be spread upon the walls with a large whitewash brush, and no pains need be taken to do a neat job. Whatever wash falls upon the floor in the operation, is not lost, but helps to sweeten the stable or stall. The quickest and most satisfactory method, is to use a force pump, by which the lime-wash can be thrown into every crack and corner.

More Mutton-Sheep.

The breeding time for sheep is just ahead, and flock-masters should be planning for early lambs, to meet the wants of the market next season. We need more fine-wooled sheep, more long-wools, but especially more mutton-sheep. The manufacturers can get wool to suit their purposes, if they have to import it; but good mutton for the million, if had at all, must be raised within easy reach of the local markets. There is a lamentable dearth of good mutton in the village and rural markets, as we know from a personal experience of thirty years and more. Lamb is quite plenty in the summer months, at the retail price of twenty to twenty-five cents, and mutton in the fall months at a little less price than good beef, but the rest of the year it is hardly to be had at any price, as if it were a thing out of season, like strawberries in December. We ought to have mutton the year round, so that delicate stomachs that eschew veal in spring and fresh pork in winter, can have a change from beef and poultry to mutton-chop at their convenience. Good dog laws have been passed in some of the States, so that sheep-raising is possible, and the owner gets damages when his flock is worried by the dogs. There is improvement, but it is very slow, and there is great want of information as to the best breeds for mutton, and the best way to improve the flocks of common sheep. The pure Southdown is the mutton-sheep of all other breeds, unquestionably. Then, after this, the various other families of Downs, as the Hampshires, and other English shires, taking the names of the counties in which they are bred. A Southdown ram, running with a flock of Merinos or common sheep, will bring grades giving an excellent quality of lamb and mutton, though not equal in flavor to the purely bred. If these grades are put with a Cotswold ram, we have a sheep much increased in size, with an excellent quality of mutton. This cross gives a carcass from one-quarter to a third larger than the grades, and sometimes one-half. The lambs mature early, and are great favorites with the butcher. We have found no better cross than this in our sheep breeding. It is not necessary now to pay fancy prices for good breeding rams, either of the Southdown or Cotswolds. They are quite widely distributed, and can be had at prices within the reach of any thrifty farmer. To get the best service out of the ram, he should not be left to run loose with the flock, as is the common practice, but should be kept by himself, on generous feed, and led out when the ewes are in heat. Kept under this restraint, he will serve a larger number of ewes, and the offspring will be more vigorous. Mutton-sheep are so easily raised, and the flesh is so wholesome an article of diet, that every owner of a good grazing farm ought to cultivate them for the supply of his table and the local market. The export of mutton carcasses to England has become a large business, and cannot fail to stimulate this industry. Get more Southdown blood into your flock.

Harvesting the Corn Crop.

The best way to harvest corn, is no doubt to cut it up at the ground (see fig. 1,) the closer the better. The lowest joints of the corn stalk are much stronger than those higher up, and it is an object to set up the stook so that the valuable portions are as far as possible above the ground. There is no gain in cutting so as to leave these tough ends of the stalks in the field (see fig. 2.) They are not eaten by cattle, and will be turned under at the next plowing; most farmers think that they save a good deal of labor in not hauling them to the yard, and back in the form of manure; but there is

Fig. 1.—CORN CUT LOW.

a positive loss: 1st, because there is more danger of the stooks getting down, and the corn and fodder becoming wet and decayed; 2d, because it is better to have this inedible portion of the stalk, become partially decayed and soiled by the ground than a portion where the leaves are attached; 3d, because it is best to cart to the barn-yard or compost heap, all such rubbish, potato-vines, and much that farmers are in the habit of leaving to rot, and to be plowed in on the field. It is an easy matter to go to the field with a corn knife, and cut up the crop, setting it up around a center "hill," which remains uncut, or about two "hills," with their tops twisted together, and to finish the stook by binding the tops with a band of limbered suckers, or weakly stalks. Such stooks will be sure to fall over, and much of the corn will be damaged as well as the fodder. It is much better to go prepared to make a first rate job of it. A stooking-horse is almost indispensable to putting up stooks that will stand. The common corn knife is good enough for cutting corn by hand, but a light steel field-hoe, well sharpened, having a handle 12 to 14 inches long, to which a strap is attached as shown in fig. 3, is better for cutting close to the ground. It needs only a single blow to cut up a "hill." The question as to the number of "hills" to the stook, may be settled by the size of the corn, and preference of the farmer. In general the fodder will be better if the stooks are large—say containing 36 hills each. The accompanying diagram, fig. 4, shows the position of the stook in the center of 24 hills, of 25 hills, of 30 hills, and of 36 hills. The difference in the distance one has to carry the out-side hills is not great. In the case of 25 hills, the stook is built around the center hill, which may either be cut up or left standing; and in the case of 30 hills, two hills may be joined by their tops. The additional security against blowing over, is so little, that it is usually best to cut up these center hills. If properly set around a "horse," and well bound, corn stooks stand firm long into cold weather. Willow or other tough withes are the best bands, but to use them with greatest satisfaction, one needs a binding winch, fig. 5. The withes should be prepared beforehand, twisted or wrung so as to separate the fibres throughout the whole length of the withe. To bind a stook, the pin is run through one eye of a small rope three feet long, having an eye spliced in each end; then holding the winch in the right hand, the rope is thrown around the stook and caught by the left hand. The pin is driven into the stook, where the band should go, and the free loop slipped over the short end of the crank-bar of the winch, when by turning the crank the rope is tightened, and when tight enough, the band is put on, and then the winch is taken off. A stook so put up will stand up in good shape all winter.

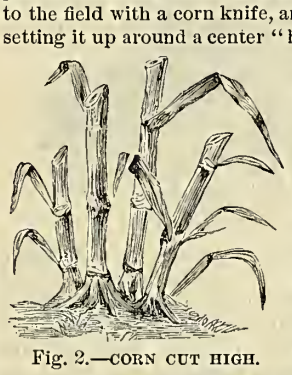


Fig. 2.—CORN CUT HIGH.

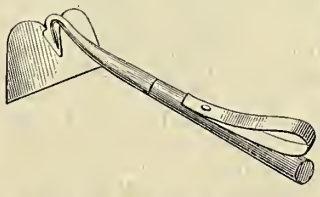


Fig. 3.—A HOE CORN CUTTER.

Feeding to Enrich the Soil.

It is now time to pay special attention to the fattening of swine, beeves, etc. Other things remaining the same, the larger the number of animals fattened, the better it will be for the farm. To this end it is usually best to buy oil-meal, and other rich, concentrated foods, and feed them liberally with the hay and other fodder obtained from the farm. Should the soil be poor, or partially exhausted, this is one of the best methods of enriching or restoring it. In the fattening of farm stock, but a small portion of the essential soil elements of plant food is retained by the animal, so that there is a double gain by the operation. There will be

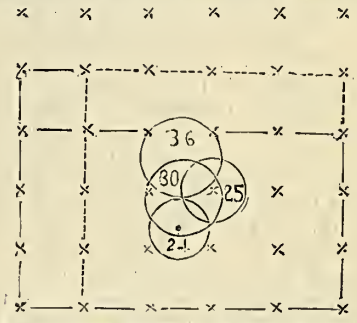


Fig. 4.—THE POSITION OF THE STOOK.

a handsome profit on the animal that is sold, and a large supply of good manure that is left, with which to enrich the land for future crops.

Selecting Seed Corn.

The importance of sowing or planting good seed, can not well be over estimated. The law of "Like produces Like," is forcibly illustrated in the case of corn. There are instances where a difference in the seed made all the difference between a paying

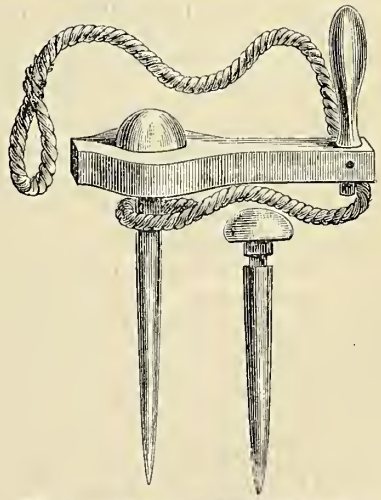


Fig. 5.—WINCH FOR BINDING STOOK.

and a losing crop. In selecting seed corn, great care should be taken that it is the best. It is not always an easy matter to decide which are the best points. For example, some farmers may prefer two medium sized ears, instead of one large one upon a stalk. We are content with one good ear to the stalk, but it must be long, sound, well filled out, heavy, early ripened, and one that is husked with ease. We ask for only one such ear, and it is asking enough of any single corn-stalk. An equally good ear with a nubbin on the same stalk, is not preferred. In the latter case, the product may revert to the poor ear, to which it is so closely

related. The selection should be made while the stalks are standing, and if necessary, give the chosen ears special advantages for early and perfect maturity, by removing the "suckers," or anything else that would deprive the stalk of making the best growth. The stalk can be easily marked by some straw or cloth tied around it. So soon as ripe, the seed ears should be husked, and placed in a safe place. It is a good plan to hang them in bunches by their husks to the ridge-pole of the corn house, thus providing good and safe keeping for the corn.

The Care of Celery.

Celery is one of the plants which make a rapid growth in this month of cool nights and warm days. The plants that have been growing in their own way, will need to have their outer leaves straightened up, and the growth of the plants directed upwards. This is done by an operation the gardeners call "handling." The soil between the rows of celery is loosened, and drawn towards the plants with a hoe; the leaves are to be brought to an upright position with one hand, and held thus by pressing the soil firmly to their base with the other hand. This is a very different operation from that of "earthing up" for blanching; its object is merely to bring the plants into a proper shape for future treatment. Indeed, for the celery to be used in winter, this is all the attention it needs until it is stored in trenches, as it undergoes the blanching in those. To prepare celery for early use, it must be banked up; in two or three weeks after the handling process, the earth from between the rows is banked up against the stalks, covering the whole, save a few inches of the longest leaves, and leaving a steep smooth wall of earth. On the large scale this is done by men working with spades, one on each side of the row. In three or four weeks after thus earthing, the stalks will be blanched and ready for use. Only as much as will be used or sold within a short time are earthed up during this month, and the early part of next, as the plant is still growing, and the stalks will soon become hollow and useless, if growth continues after earthing. The celery will be much better if allowed to grow until checked by cool weather at the end of the season, and then placed in boxes or trenches, to blanch for later use.

Chrysanthemums for the Window.

It seems strange the Chrysanthemum receives comparatively so little attention in this country. In England there are numerous societies devoted solely to the promotion of its culture, and the competition to secure the prizes is active. The plant is occasionally seen in our gardens, but not so frequently as it should be, considering its great variety of brilliant colors, and its flowering among the very last things of the season. Indeed they continue in bloom so late, that a severe frost is apt to cut them down before their season of beauty is over. For those who wish the best results from the plants in house culture, they should be started for that purpose and cultivated in pots from the outset. The English, with their prize plants, not only do this, and take great care in cultivation and pruning, but in order to get the finest and largest flowers, remove all but two or three buds from each stem. Those who are so fortunate as to have Chrysanthemums in the garden, can prepare a part of them for blooming in the window. They make a brilliant show, and their time of blooming may be greatly prolonged. The plants may be taken up and potted as soon as the buds are fairly formed; if the clumps are large and much crowded, thin out the weaker stems, giving the plants a rich soil. They will wilt and look rather sorry at first, but by placing them in the shade a few days, they will soon recover. Should they be attacked by a blackish plant-louse, as they often are, the free use of tobacco-water will clear them. When the plants have recovered, set the pots where they will be sheltered from heavy winds, and give proper attention to watering. They need not be taken in until there is danger of severe frost, and should then be in a room, the windows of which can be opened on mild days. By avoiding close confinement and too much heat, the bloom may be greatly retarded and also prolonged. After the flowering is over, cut the stems completely away, and put the pots in the cellar, taking care that the roots do not get so excessively dry during winter as to kill them.

The Melon-Worm, and Pickle-Worm.

It would appear that a particular culture only need to be started in a locality to bring in a number of heretofore unheard of insect enemies. A marked illustration of this is afforded by the Cranberry. The Cranberry can only be profitably cultivated in localities having certain natural advantages. In these few places, large areas are devoted to this one plant, and as a consequence, a number of insects, heretofore unknown, have made their appearance and diminish the growers' profits. It is not only with such local crops as the Cranberry that these invasions occur, but let some crop that has heretofore been grown in a small way, without

THE MELON-WORM.

molestation, be largely cultivated in any locality, and insects will be sure to enter their protest, and insist that they shall be taken into account when the grower reckons up his profits. It is only within a few years that certain persons, in Georgia and other Southern States, finding that it would pay them better to grow Melons for the northern markets than it would to cultivate cotton, that we have heard of "The Melon-worm." It is no new insect, but it is only since Melons have become abundant and have been raised by many acres, that it has become troublesome. Just as our greatest Potato pest, the Colorado Beetle, only became known when it was supplied with abundant food, so this enemy to the melon-grower has only been annoying as melon fields have become numerous. The insect was described as a native of this country over a hundred years ago, but it was then known only to scientific entomology. Within a few years it has demanded the attention of the practical entomologist. The melon-grower in the Southern States finds that the leaves on his promising plantation appear to be troubled. An examination shows that the fruit is also attacked; worms have eaten into the growing fruit, as many as half a dozen on each one, making unsightly holes, and causing general devastation. The worms are of a light yellowish-green color, somewhat translucent, and are about an inch and a quarter long. They feed upon the leaves, the vine, and the young fruit indiscriminately, causing destruction wherever they go. When full grown, they make their chrysalides upon the leaves of the Melon, or on the flexible leaves of any other plant near at hand. They coil up the leaves by means of a web, to form a shelter, where they undergo their transformations, and finally issue as a very handsome moth, the scientific name of which is *Phacellura hyalinitalis*. The engraving represents the different states of the insect—the larva, the pupa within its coiled leaf, and the perfect insect, or moth. The moth, long known in cabinets for its beauty, has a spread of wings of about an inch; these are of an iridescent, pearly whiteness, except a narrow black border. The body and legs are also white and glistening, while at the very end of the body is a curious movable tuft of feather-like appendages, of a pretty buff color, tipped with black and white. The number of broods of this moth in a season is not well known, but it is ascertained that the insect passes the winter in the chrysalis state. The Melon-worm has completely ruined plantations in Florida, Georgia, and in other Southern States, its ravages in some localities being so disastrous as to cause some to abandon Melon culture altogether.

REMEDIES.—It has been suggested to plant Melons very early, so that they may ripen, and be out of the way of the most destructive brood of worms. As the first brood no doubt feeds upon the leaves before the fruit sets, it is suggested that especial attention be given to this first brood by hand-picking and the use of insecticides, among which Pyrethrum is regarded as likely to be of use. As occurs with other insects when they become abundant, some natural enemies to the Melon-worm have already appeared in the form of parasitic flies, which deposit their eggs in the body of the worm.

THE PICKLE-WORM.—In Southern Illinois, in parts of Missouri, in Michigan, and in other localities, where the Cucumber is largely cultivated for pickling, a caterpillar is troublesome, which, from the fact that it was first noticed within Cucumbers after they had been preserved, has received the name, "Pickle-worm." As extended Melon culture made known the Melon-worm, so that of the Cucumber brought the Pickle-worm into prominence. It is a native insect, which, until comparatively recently, had been known only in cabinets. Though called Pickle-worm, it does not confine its attacks to the Cucumber, but feeds upon Melons also. The worm is variable in appearance, being translucent and yellowish-white, resembling in color that of the flesh of the Cucumber, on which it feeds. The length is about half an inch; the head is honey-yellow, and the rings of the worm are marked with black spots, each of which bears a fine hair. Like the Melon-worm, this makes its cocoons on the leaves, and undergoes its changes in about 10 days. The perfect insect is a moth, and belonging to the same genus as that of the Melon-worm. This is *Phacellura nitidalis*, which is described as being "of a yellowish-brown color, with an Iris-purple reflection." The body of the moth below is of a beautiful silvery-white; the end of the abdomen in the male, has a very large brush of flattened scales, some of which are whitish, others orange and brown; the smaller brush of the female is black. The treatment for this is the same as that for the Melon-worm.

Plants for Cold Frames.

The seeds to produce the plants of Cabbage, Cauliflower, and Lettuce, to be wintered in cold frames for the early crops of next spring, must be sown this month. Market gardeners find that the date of sowing is a matter of great importance. If sown too early, the plants may run to flower next spring; if too late, they will not be strong enough to winter well. The time best for one locality, will not answer for another, and allowance must be made for difference in the seasons. Near New York the 15th is the usual time of sowing; one successful gardener, with all his experience, does not trust to a single sowing, but makes two, one on the 12th, and another on the 16th. These dates may not be best for localities further inland, and each one must learn by experience, and the loss of a little seed, which is the best date for him.

Apples for Export.

From reliable sources we learn that the apple crop will be very poor in England this year, and not over-abundant on the continent of Europe. A short apple crop in England, means a demand for American fruit, to the profit, if not of our orchardists, at least to our shippers. In former years, American apples have met with a ready sale at paying prices in England, but within the last two or three years, the trade has been less profitable. It is the old story over again, that good fruit in good

condition, hrings good prices. Two years ago, taking advantage of the unusual scarcity abroad, parties sent over large quanties of apples, without regard to their quality or condition. As a consequence, this fruit in Convent-garden market, as it would have heen in Washington market, was left on the dealer's hands. Hundreds of harrels did not hring the cost of the freight, and American apples fell into disfavor. The same course, if followed this year, will meet with a similar result. Only the best fruit, packed in the best manner, will pay in England as at home. The English received their first impressions of Amcrican apples from the Newtown Pippin, which several years ago was the only kind sent abroad, and was in demand there, however large their own crop of fruit might he. But this variety is now far from abundant, and others havc been forwarded of late years. The "Baldwin," "Greening," "Spitzenherg," "Northern Spy," "King of Thompkins Co.," etc., have sold well, when good of their kind. The rascally practice of "topping," has injured the reputation of our fruit, so at present, it is not hought by the appearance of the top layer, hut the contents of the harrel are poured out for the inspection of the purchaser. Properly managed, thc export of apples might be very profitable, and we hope that some method may be devised, hy which a share of the profits may reach the grower of the fruit.

The Time for Planting an Orchard.

The discussions as to the most favorable time for tree planting, as a general thing, favor the autumn, hut notwithstanding this, by far the greater number wait until spring. Thcre are many points in favor of autumn planting in all the milder parts of the country. In the far northern localities, where winter sets in ahruptly, spring planting is to be preferred. But as a general thing, our autumn is prolonged, the transition from summer to winter is very gradual, and we have then the most delightful weather of the whole year. At this time the soil is in the best condition for working, not having lost its genial warmth; not only can the work he done with greater comfort and more rapidity, hut the soil is in the hest condition to receive the roots. A tree is not a mere dead stick, to he set in the ground as if it were a post; it is still alive, though its vitality is not manifest; after the roots are placed in the soil, a certain growth takes place before winter. The wounds on the roots, made in taking up the tree, commence to repair damages, and often new fibres are formcd, to be ready for active work by healing over in the coming spring.

In autumn, there is not in the nurseries so much of a rush of work as in spring, hcsides the stock has not heen reduced by many salcs, and the trees are likely to be better. One ohjection to purchasing the trees in fall made by some, is that the nurseryman, in order to fill his orders, must strip off the foliage. This has hut little weight, if the nurseryman understands his business. In our mild autumns, when the leaves havc done their work and have fully ripened—for leaves ripen as well as fruit—they will often remain attached to the tree for weeks, or until a severe storm shakes them off. When the leaves are in this state, they require very little force to separate them from the hranches, and the stripping, if done at this time, can not injure the tree. The thorough planting of a tree requires that the soil should be in immediate, closc contact with all the roots; no two roots should touch one another, hut every root and root-fibre must be surrounded with earth, and no air-spaces left among them. This can not be done with a hoe or with the foot, hut requires the hands to work the soil in among the small roots. At this time of the year the soil is in that genial condition that one does not hesitate to handle it and perform the work of placing the roots with thoroughness.

At this season, the planting of the tree should be finished hy making a mound of earth a foot or more high around its base; let this be made steep and as smooth as possihle. A mound of this kind serves several purposes: it greatly stiffens the tree and prevents injury hy violent winds; it serves to protect the roots in severe weather, and if no rubhish is allowed to accumulate upon it, will keep off the mice, so often injurious to young trees. While a mound of this kind will generally avoid the use of stakes, there are localities in which, on account of violent winds, staking is necessary. When staking must be done, set the stakes first. Having made the proper excavation (not a mere *hole*) for the tree, drive down the stake, and then put the tree in position, arranging the roots upon each side of it. If the trees are planted, and the stakes driven afterwards, many of the roots will he bruised and broken, and the tree injured.

Disfigured Raspberry Canes.

One in working in a Raspberry plantation, especially after the leaves have fallen, will frequently find the canes disfigured hy irregular longitudinal scars, as shown in figure 2. It is not rare for the stem to be broken off by the wind at this point. If such a stem be carefully examiued by cutting it open, there will he found numerous pale yellowish eggs, placed somewhat diagonally across the pith, as at *b*; one of the eggs, somewhat magnified, is shown at *c*; this, upon its more rounded end, is marked with opaque granulations, a kind of roughening of the surface, more largely magnified at *d*. If these eggs are allowed to remain until next May, they will produce a hrood of minute crickets. One of these is shown when full grown, in fig. 3. It is called the Snowy Tree-cricket (*Œcanthus niveus*). Its general color is a very delicate pale green, or greenish-white, and it has a peculiar semi-transparent appearance. During their young state the crickets are useful in destroying plant-lice and the eggs of other insects, but later, when they get tbeir wings, which is early in July, they hecome destructive to plants. The Raspberry stem appears to be preferred as a place for its eggs, hut in the absence of this, it will make use of the Blackherry, the Grape, and even the Wbite Willow and Soft Maple. But the injury it causes hy wounding the stems of various cultivated plants is but a part of the mischief it does. It will cut off the leaves of plants, it having heen known to completely strip a young vine of its foliage in a single night. Worse still, it will cut the stems of the young grape clusters, and when the ground is found to be mysteriously strewn with green fruit, the work is probably due to this innocent looking little cricket. The chief remedy is to destroy the eggs; the punctured stems should be cut away, and these, as well as any that may have been hroken off hy the wind, etc., should be burned. The cricket itself will sometimes he seen when one is working among plants, especially among grape-vines, and though very lively, should be captured if possihle. The stems of the Raspberry often show, more especially at the West than at the East, irregular gall-like swellings, like that represented in fig. 4. This is due to a horer, the larva of the small beetle shown in fig. 1, the natural size being indicated by the line at its side. It is called the Raspberry-horer and the Red-necked Bupestris (*Agrilus ruficollis*), its neck, or properly thorax, heing red. Cutting and hurning all such excrescences will keep the insect in check.

Fig. 1. THE RED-NECKED BUPESTRIS.

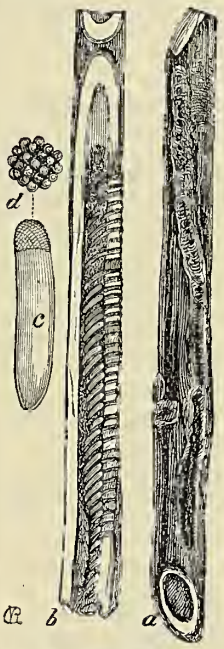


Fig. 2.—EGGS OF SNOWY TREE-CRICKET.

Spinach for Next Spring.

Spinach is to be found in the City markets all the year round, save in the hottest months. It is always in demand at a fair price, and is regarded,

Fig. 3.—SNOWY TREE-CRICKET.

in view of the little lahor it requires, as a profitahle crop. Singularly enough, spiuach does not appear to be generally known among our farmers, either to grow for their own use, or as a crop to take to market. Especially those who are market farmers, and supply vegetables to a not very distant town, would find it to he easily raised, and to meet with a ready sale, especially in towns and villages where the population is largely European. The spinach, to be marketed in early spring, must have the seeds sown this month. It may follow onions, early cabbages, potatoes, or any other early crop. Give a good dressing of stable manure, or its equivalent in some artificial fertilizer; make the soil fine, as for a root crop, and sow the seed in drills 15 inches apart. It is customary to sow thickly, using 10 lbs. or more of seed to the acre. Near New York, the sowing is done from the first to the middle of this month, following with a roller, or if this is not at hand, the gardener's ready substitute, the feet, passing over the rows and treading them down, to bring the soil in close contact with the seed. The catalogues often recommend the Prickly-seeded variety as best for fall sowing, but we have not found it preferable to the Round-seeded. Usually the plants will be large enough to allow of thinning before winter sets in, and a supply for use or for sale, may he had from the thinnings which should be cut out where the plants stand thickest. In very cold localities, the spinach should have a thin covering of straw, leaves, or other litter, but this is not usually done near the coast, though even there, a slight covering preserves the leaves in better condition. In spring the soil is loosened between the rows, and the plants soon start into growth; when new leaves are formed in the center of the plant, the crop may he cut for use or for sale.

Fig. 4.—GALLS IN CANE.

The Strawberry Bed.

Those who followed the instructions given in July last, and made a strawberry-bed last month with pot-layered plants, are sure of a good crop next spring, unless some accident prevents. Good results may he expected from a bed made the present month (September,) hut the sooner the work is done, the better. Those who have not pot-layered the plants themselves, can procure them of all the principal nurserymen, who now propagate in this manner a supply of plants of the leading varieties. Of course they cost more than the ordinary plants, but many are willing to go to the extra expense, if they can only he sure of a crop of fruit a year sooner than they could have it in any other manner. Those who raise fruit for market, do not need to be told that good strawberries can only he raised on good soil. In private gardens the plants are rarely properly fertilized. Well decomposed manure is best, and a liberal coating, three inches thick is none too much, should he spread over the surface and spaded in. In the absence of manure, a good dressing of some of the artificial fertilizers may be

used instead. The plants may he set in rows two feet apart, and 18 inches distant iu the rows. Some put them only a foot apart in the rows, but in rich soil this does not give space enough. In setting, the ball of earth is turned out of the pot, and put in its place in the hed, without disturbing its roots. At the time of planting, pinch off any runners that may be forming upou the plants. During the growing season, keep the hed clean by use of the hoe, and remove all ruuners as they appear. The plants thus treated will form fine large stools hy the time cool weather checks their growth.

Picking Fruit—Fruit Ladders.

The first step towards getting the best prices for fruit must be made in the picking. The old method of shaking or thrashing the tree will answer wheu the fruit is shovelled into a wagon body and carried for several miles over a rough road. This is not the method of marketing apples to get the best prices. Early apples are ofteu more profitable than the later varieties; as a general thing they are more

A GOOD FRUIT LADDER.

tender, and can only be profitahly sold in markets near at hand. After they have reached maturity—have made their full growth—they soon become mellow and quickly decay. Hence the orchardist should he familiar with the time of ripening of each variety, and he ready to pick it in its proper condition. The hest packages for early apples are either half harrels or bushel crates. We gave in August last (page 324) the method of making a crate of the proper size to hold a bushel. Whether the fruit is packed in half barrels or in crates, hoth should be new, and so filled that some pressure will be required to bring the head of the half barrel, or the cover of the crate, into place, in order to prevent any shaking in transportation. But the first step in marketing the fruit, is to pick it properly. Ordinary ladders that rest against the trunk of the tree, help; but the best specimeus grow on the outside of the tree, upon the extremities of the branches, where they are exposed to the sun. The fruit growing iu these places cannot be readily reached by the ordinary forms of ladders. A step-ladder is often used, but this is not so conveuient as the kind used hy painters. This is made of two parts, as shown in the engraving. When opened, it stands firmly, and may be used as a step-ladder. Ordinarily, it will he found hest to have two ladders of this kind, and by placing a board from one to the other, a platform may be formed, higher or lower, from which the exterior portions of moderate sized trees can be reached, and greatly reduce the labor of fruit-gathering. The picker should have such a receptacle for the fruit that will allow him to deposit it without hruising, and leave both hands free. A hasket hung to a strap which passes over the shoulders, is convenient. A grain hag may he slung over the shoulders, with the mouth kept open by a stick, iu such a manner as to be convenient for the picker. In packing the fruit, make sure that it is of even quality throughout the crate, etc., and mark the name of both the consignee and shipper plainly upon the package.

Successful Culture of White Pine.

Were it generally known that it did not require several lifetimes in order to raise a profitahle forest, one great obstacle to tree culture would he removed. We have cited the rapid growth of birches and elms on our place as examples of trees of a size to be useful, growing in 12 years from the seed. Our correspondent "A. L. J.," Cheshire Co., N. H., gives us his experience in raising a White Pine grove. Ahout 30 years ago, having a lot of about three acres which could be devoted to the purpose, he cleared the land. On a "hearing year" of the pine trees, he collected about 12 bushels of the cones iu the early part of September. These he scattered over the land without giving it any preparation, with the result of thoroughly seeding it. We do not commend this rude culture, hut it is interesting that success followed it. Mr. J. says:

"The next year the little pines appeared by the million. They grew the first season about two inches high; the following season they made a growth of from one half to three-fourths of an inch; the next year they grew about three inches, and the year following about one foot. In the next 13 years they grew over 30 feet. These trees now measure iu hight, hy estimate, about 45 feet, the larger ones heing about 18 inches through at the hase. Cattle were not allowed to run in the lot for 12 years after sowing. At that time I thinned them out so as to give the best a chance to grow, trimmed up those left standing to the hight of three or four feet, taking off all the dead limhs.

"I have trimmed the trees in the lot and thinned them out from time to time, in order to give the best specimens a chance to grow. The trees are now free from hranches to the hight of ahout 23 feet. Trimming has usually been done between the first of Novemher and first of February. But few live limbs have hecn removed, except to give a tree a better appearance, I have sometimes taken one off. The wounds have always healed over perfectly. The new wood growing close over the knot and making clear timber of all that grew outside of where the branch was cut off."

A Cheap Ice-House.

The amount of ice used increases every year, and this is largely owing to the ease and cheapness with which it can be kept. Ice becomes a neces

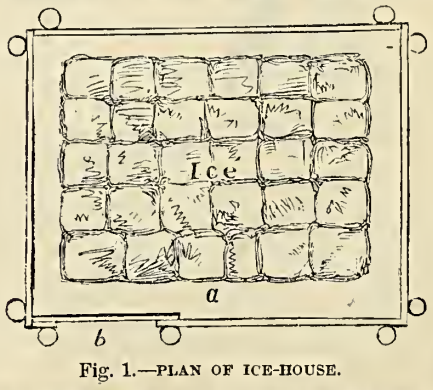


Fig. 1.—PLAN OF ICE-HOUSE.

sity in many cases so soon as its value is known by experience. The gain in the quality and price of dairy products by using ice many times repays its cost, and in the preserving of meats and other articles of food its value is beyond computation. An ice-house is not an expensive huilding, and is within the reach of nearly every farmer. The accompanying engravings show the form of a cheap ice-house, that can be huilt at only a small outlay for materials, and with but little labor. The dimensions will depend upon the amount of ice desired and the length of the boards to be used. Nine posts of suitahle hight are set, two at each corner, as shown in fig. 1; the ninth post is put on the front and at one side of the doorway. The front posts are a foot or more longer than the rear ones,

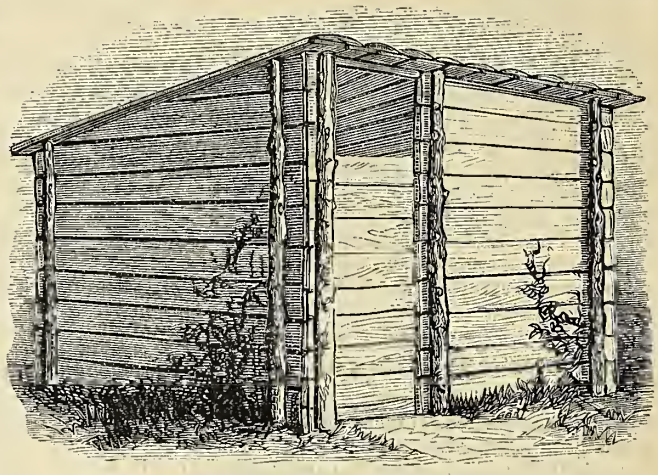
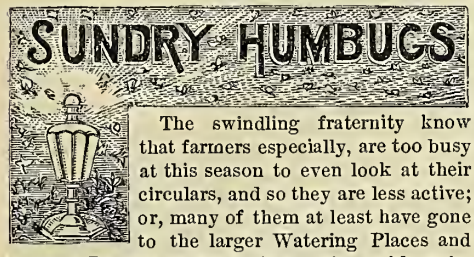


Fig. 2.—THE ICE-HOUSE COMPLETE.

to provide for a slanting roof; the tops are held in place by light scantling. The plank or hoards are nailed to the posts with cleats to secure them to each other at the ends. A layer of six inches of saw-dust or cut hay is spread upon the ground before the first tier of ice is put into the house. The ice should not come within a foot of the wall, and fill the space between *a* with the saw-dust or other packing material. The plank wall and the ice tiers may be carried up together until the house is filled. A door, *b*, is made by using two lengths of plank on the front side, the short ones being so placed that they can be removed as the ice is taken out. A thick layer of packing material should be put upon the ice after the house is filled. A roof of slabs or any other material that will keep out the rain is sufficient. The ice-house complete is shown in figure 2. It is hoped that farmers and others who have need of ice throughout the hot summer months will construct an ice-house before winter comes and fill it during the ice harvest. Ice is one of the crops that must be gathered in its season.

"Army Worms Eggs."—"J. W. G."—Mattituck, L. I., sends us specimens of what he takes to he the eggs of the Army-worm. He wishes to know ahout these eggs, and what kind of an insect will be hatched from them. The specimens sent, though white and egg-shaped, are not eggs at all, but are the cocoons of some insect, probably an Ichneumon-fly, which is a parasite of the Army-worm. It is fortunate for cultivators that the destructive insects have their insect enemies, to keep them in check. A common example is seen in the large green caterpillar known as the Potato-worm, or Tomato-worm (*Sphinx quinquemaculata*), the body of which is often completely covered with the small, white cocoons of the parasite. The parent fly deposits great numhers of eggs in the soft body of the caterpillar; the larvæ or maggots soon hatch out and live within and upon the substance of the caterpillar, but avoiding any vital parts. The caterpillar feeds and barely keeps alive, as it has to support a large numher of its unwelcome guests. When these insects within an insect have completed their growth, they come to the surface of the caterpillar and there spin their pure-white cocoons, from which in due time the perfect insect comes forth. The caterpillar keeps barely alive all the while, but is so much enfeebled that it cannot com-

plete its own changes. What occurs with this caterpillar of the potato or tomato, takes place with other caterpillars, and the supposed eggs of the Army-worm are the cocoons of its parasite. Were it not that we are aided in our fight against destructive insects by other insects, we should fare poorly. Whenever a caterpillar, of any kind, is found with these supposed eggs upon it, do not destroy it. Whatever mischief it can do, in its disabled condition, will he more than offset by the benefit that may result from the parasite.



The swindling fraternity know that farmers especially, are too busy at this season to even look at their circulars, and so they are less active; or, many of them at least have gone to the larger Watering Places and Summer Resorts to ply their vocation, with variations, among a different class of victims. There are several operators in the agricultural districts with some new-fangled attachments to harvesting and other implements, but our readers are too much engaged to stop to furnish particulars.

The Peach-Growing Districts.

A few years ago, at harvest time, we were in the peach-growing counties of Delaware and Maryland, and saw how the growers were daily visited by those who professed to offer special advantages to shippers of peaches, and made all sorts of tempting offers and promises. On coming to the city, we found that these parties were not known among the regular commission dealers, not even having a place of business. They do a sort of side-walk trade, and when wanted cannot be found. We advise peach-growers to stick to well-known commission men, and not trust to transient fellows, no matter how large a commission they may offer.

Gambling in Grain.

A year or more ago we showed up the bogus stock-brokers who offered great inducements to persons at a distance, to engage through them in operations on Wall Street. There are parties in Chicago who are constantly offering similar inducements to engage in gamhling on the price of grain. A subscriber in Ohio sends us the circulars of one of these, which proposes to form

"Mutual Investment Clubs,"

and asks if it will he safe for him to invest. In Texas they have an adage, "Never play at a game you do not understand." We have read through these circulars carefully, and fail to understand them. The concern professes to operate clubs, and asks people to subscribe for shares at $10 up to $1,000, offering a very large profit, in some cases as much as $5.10 on a $10-share in less than two months. We can only say that Chicago is a very wide-awake business place, and were there any such profits possihle or probahle, there would be no need of sending to Ohio farmers to solicit subscriptions. Any scheme that offers such profits need not go a-hegging outside of Chicago, or any other business place, and all the money expended on circulars, reports of "The Profits of Club 13," and the rest of it, might be saved.

Medical Matters.

As usual, a large share of our inquiries relate to these. Here comes from Iowa an inquiry from "A Suhscriber" about a "Metaphysical University." We had often seen a sign hearing that legend on a house in a street not far from our office, and had often wondered what it could be. For an obscure brick tenement to call itself a University was odd enough, but to he a "Metaphysical University," was quite beyond our comprehension. "Metaphysical" is a big sounding name, but if one looks it up in the Dictionary, he will not get a very satisfactory definition. He will find, in brief, that metaphysics is the science of the mind. Our Ohio friend's wife was troubled, not as to her mind, but as to her hody, and he writes that as this metaphysical shop has drawn from his wife about $150, and the investment has not done her the slightest good, he wishes us to save other poor unfortunate victims by exposing

The Metaphysical University

as a humbug. We should think that its ridiculous name would proclaim it as such; but there are people everywhere who need to be assured that those shops who advertise themselves at a distance as "Universities," "Colleges," "Institutes," and the like, as located in New York City, when found will be obscure buildings upon some side street.

A correspondent sends a paper published in a Westeru city which contains a displayed advertisement a column long,

Of an Entircly New "Trust Company."

It proposes an "innovation" upon the old style of doing husiness, and claims to give "an opportunity to realize a Handsome Dividend on a comparatively small sum in a very short time." All that we thus far know of this Trust Company is from this advertisement, and we can only say to the friend who asks about investing in it, that this is of a character to suggest the exercise of great caution. There is altogether too much flourish of trumpets and too many vague generalities, to impress one favorably. We should take nothing on "trust," even in this "Trust Company," but examine carefully.

An Electric Chair

is the latest thing in the way of electricity. Of course this is, according to its inventor, the only real medium for applying electricity. He heads his advertisement with "Edison Outdone," in large letters, which shows him to be a modest man. He says: "We have established ourself in Indianapolis as the original, genuinc, and only true, sovereign, electrical cure for the most vile, loathsome, and life-destroying diseases that afflict humanity"—which is rather the reverse of complimentary to the inhabitants of that prosperous city. Whether this electric furniture is for family use, or only for the "doctor's" office, the advertisement does'nt say.

Gambling With Needles.

In an old-fashioned game with pins, money could be lost and won, and now we have needles made the medium or reason for a lottery or distribution, as we take it to be. The circular says that any person paying $1.00 for 10 papers of the needles, "will receive ALSO ONE of the articles NAMED BELOW." These articles are sewing machines at $65, pianos at $300, gold watches at $65, and other valuable articles; but there are also 5,000 steel engravings, valued at $1.00 each, and the chances are that "one of the articles" will be one of these engravings. If these steel engravings are valued at only $1.00 for advertising purposes, what can be the real value? This is rather thin for Philadelphia.

A Great Improvement in Cotton.

The wonders of plant life are by no means confined to the cooler regions of the north, where self-pruning grape-vines, strawberries which grow on shrubs like raspberries, and peaches that are, by being hudded (or grafted, we have forgotten which) on the French Willow, free from yellows, and all other diseases, are offered to the credulous. Now that most valuable plant, the Cotton, presents itself in new and remarkable forms. In August, 1881, upon the authority of a United States official, we informed our many readers in the cotton-growing States against a so-called

"Worm-Proof Hybrid Cotton,"

the seeds of which were being sold in Louisiana at 30 cents each, but less by the dozen. It was claimed that this cotton was the result of a hybrid hetween common cotton and "a weed which no worm or bug would touch." On general principles we pronounced this "Worm-Proof Hybrid Cotton" to be a thing to be avoided. We were threatened by this weed and cotton hybridizer with a suit for damages, and a lady wrote us a long and very—well, say earnest—letter ahout our being opposed to improvement in the South. Thus far we have not been called into court for the alleged libel. But this "Worm-Proof Hybrid Cotton" is nothing to

Another "Hybrid Cotton,"

which is at once so much more hybrid and so much more cotton than the Louisiana thing, that that should retire from the field at once. A subscriber in Texas sends us the circular of this cotton, and asks us for information about it. This new cotton is not a product of Louisiana, but of Georgia. We are told: "It was produced by hybridization of the wild cotton which grows along the low lands and banks of the Caloosahatchie river in Florida, with the common okra of our vegetable gardens." The cotton and the okra belong to the same natural order of plants, and while we can not say that they will not hybridize, we do not believe that they will. It is likely that cotton has escaped from cultivation in some parts of Florida, but why start with this half wild plant? Where is the Caloosahatchie river? It can not be a very important stream, as neither of our three Gazetteers mention it. But to this

Wonderful Cotton Plant,

the account of which will be so interesting to our many readers in the cotton-growing States, that we give it in full. This is not from the announcement of one who has seeds to sell, but, strangely enough, from an editorial in a Georgia paper. We read:

"It grows to the hight of two feet and has one beautiful bloom at the top, which resembles the magnolia flower in appearance, size, and odor. The blooms remain white for two days, and then, beginning with a delicate pink, gradually change to a dark red, when they drop off, and then appears a most wonderful boll. For a week this boll resembles that of the ordinary cotton, and then continues to grow until it reaches the size of a gallon tin bucket.

"The lint then begins to grow, but is held in place by the long, okra-like points. When fully matured, more of it can be picked by a common hand in one day than six hands can pick of ordinary cotton.

"The lint has no seed, and hence the ginning is dispensed with. The bolls produce from one and a half to two pounds of fine, long staple cotton. In the bottom of the boll from four to six seed resembling persimmon seed are found."

There you have it! Such wonderful flowers which, so to speak, "knock the spots out of" either okra or cotton! But what is the flower to the fruit—What are the miserable common bolls to one "the size of a gallon tin bucket!" We always like definite descriptions, and are glad that the gallon bucket is a "tin" one! When one describes such remarkable plants, he should not go too closely into particulars. We are told that

"The Lint Has No Seed."

But in all cotton heretofore known, the lint is an appendage to the seed, provided hy nature for some wise purpose, and none ever before grew, except as an attachment to the seed. When we are asked to believe that a plant will produce a "gallon tin bucket" full of lint just for the fun of it, we are provoked to say, Bosh! A Georgia paper says: "If what is claimed for it is true, it will paralyze the cotton-gin business, aud make our planters become bonanza kings." We say to our Georgia friends, *if* you have a gin, keep it in good order, and don't sell it for old iron this year. *If* you can become "bonanza kings" by growing this wonderful cotton, do it, but go slow; try a few seeds first —*if* at all. We have no douht that improvements will he made in the cotton plant, but they will not be in "gallon tin buckets" of lint without seeds.

Remarkable Watch Cases.

Sometimes we get an inside view of things in an unexpected manner. There is a chap in a neighboring city who advertises watches very loudly. It comes in our way to know that this person, who announces his watches in such glowing terms, has written to a well known manufacturer of watch cases, to inquire at what price he can be supplied with watch cases, "uot more than 3 K. fine, and not more than 1 oz. weight—in fact, just as cheap as they can be possibly gotten up." By the term "3 K. fine," it is understood by those in the trade that the cases shall contain 3 parts of gold in 24, or be *one-eighth* real gold. An alloy of this kind, having the hase metal dissolved out of its surface by acids, shows a thin superficial film of gold, but this will soon wear off, and expose the miserable alloy below. Then to read that the cases are to be "just as cheap as they can he possihly gotten up," is a wonderful falling off from the description of the same cases, when the watches they are to hold are advertised for sale all over the country, in auy paper that will publish the deceptive advertisement.

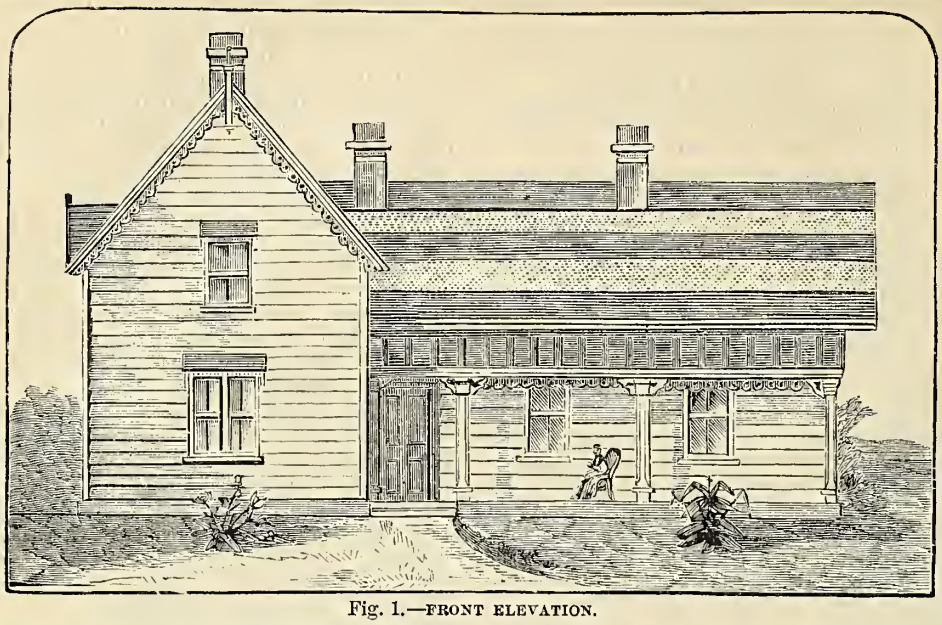


Fig. 1.—FRONT ELEVATION.

Prairie Cottage, Costing $800 to $1,000.

Cost, as here Described, $900.

CLASS I.—3d PRIZE.—BY JNO. DUNLOP, SOZORRA, ONT.

Though called by the designer a "Prairie Cottage," this house is adapted, as a whole, to many other rural localities, and furnishes suggestions for any farm house or other residence. The truth is, no one plan is likely to be exactly suited to the wants, wishes, or tastes of any family; yet no one can carefully examine any plan without deriving some hints to be adopted or improved upon. Any person intending to erect a dwelling, whether to cost $500, or $5,000, or more, should get two or three books on the subject and read them carefully. The chances are, a thousand to one, that in so doing, he will get information and primary or secondary ideas that will many-fold repay the simple cost of the books. Reed's "House Plans for Everybody," and such like books, are of the kind referred to.—Mr. Dunlop writes essentially as follows, the manuscript accompanying the drawings:

The prices of the materials are quotations from the current rates in Cass County, Dakota, in 1881.—

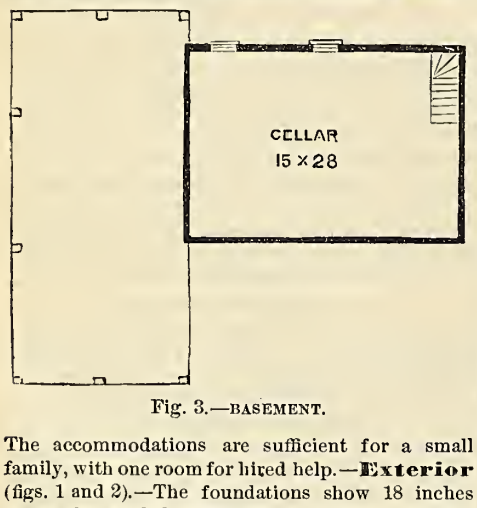


Fig. 3.—BASEMENT.

The accommodations are sufficient for a small family, with one room for hired help.—**Exterior** (figs. 1 and 2).—The foundations show 18 inches above the graded earth, which is raised to slope from the house outward, with soil taken from the cellar. The hight of the building is kept low, the better to withstand the strong winds that sweep over the treeless prairies. The Veranda, having a southern exposure, will be a comfortable resting place during hot sunshine, and help keep the house cool.—The CELLAR (fig. 3) excavations are so made that the hight of ceiling above will not be less than 6 feet. It extends under the one-story part of the building, and has two windows for light, the entrance being from the scullery.—

Ground Floor (fig. 4).—Hight of ceiling of the one-story part, 8 feet; of the two-story part, 9 feet. It contains a Parlor, Dining Room, Hall, Kitchen, Scullery, Bedroom, Pantry, and a closet under stairway. Six-inch thimbles are placed in the flues, 2 feet under the ceilings, and through the partitions where necessary. The pantry and closet are furnished with shelves. The chimney flues are built of brick, placed on brackets, 3 feet under ceilings of upper flats.

Second Story (fig. 5).—Hight of ceiling, 8 feet. The throat-ties are carried up the joists 2 feet, thus concealing the sides of walls to that extent. This story contains 3 bedrooms and a hall.

Construction.—The cellar walls are of rubble stone, foundation pillars and chimneys of brick; plastering, three coats. The frame of sawed pine, thoroughly fitted and braced; the side studding extends from sills to plates. The roof and side walls (outside) are covered with inch lumber; outside walls finished with lap-siding over the lumber; inside walls with lath and plaster. Roof of Veranda covered with ship-lap, and battens over joints. The flooring inside is tongued-and-grooved pine. Flooring of Veranda, common lumber, jointed. The inside wood-work is finished in seasoned pine. The exterior is painted two coats of slate or gray color. The prices estimated at rates as laid down at nearest station.

Estimate of Cost.

Excavating 93 yards, @ 20c		$18.60
630 ft. Stone-work, @ 10c		63.00
800 Bricks, @ $12		9.60
535 yards Plastering, @ 25c		133.75
Sills and Plate, 16 by 6 by 2	516	
Stringers, 64 by 6 by 1	32	
193 Studs, Spars, and Ties, 16 by 6 by 2	3,168	
74 Joists, 16 by 8 by 2	1,580	
106 Studs, 16 by 4 by 2	1,450	
25 Ties, 14 by 6 by 2	350	
Total	7,096 ft., @ 18c.	127.70
2,000 ft. Roof Sheeting—2,000 ft. Wall Sheeting, @ 15c.		60.00
2,000 ft. Lap-Siding, @ 26c.		52.00
18,000 Shingles, @ $3.00		54.00
50 ft. Tin Valleys, @ 9c		4.50
1,300 ft. Flooring, @ 32c		42.00
Skirtings, $7.50—Lath, $15.00		22.50
2 Outside Doors, @ $5.00		10.00
10 Inner Doors, @ $4.00		40.00
15 Windows, at $4.00		60.00
2 Cellar Windows, @ $3.00 each		6.00
Veranda, $30—Painting, $20		50.00
Carpenter Work, extra		100.00
Incidentals		46.35
Total		$900.00

Chicken Raising.—"Mrs. A. W." writes us: "Many persons, in giving directions for the care of young chickens, say, 'give no water for six or eight weeks.' This would be extremely cruel to the hen-mother, for hens are very thirsty fowls, and will not do well unless they have plenty of drinking water. Of course milk is better for both hen and chicks. I have raised a good many chickens, and do not think I ever lost one, and yet I have always given them water, which they will drink when very small. In my experience, wheat screenings have proved to be excellent feed for them, with corn-meal given occasionally. Bread and rice, as recommended by some poultry raisers, must be very expensive food for chickens."

High Prices for Hops.

Articles and items with the above or similar heading were, about the first of August, quite frequently met with in the daily papers. These embodied the statements that the hop crop of Great Britain was a failure, and that sales had already been made of American hops at prices about double of those made two months earlier. We regret to see these unqualified statements, as their effect upon the farming community is disastrous. Having witnessed two Hop "booms," as the phrase of the day has it, we do not care to see another. The last was some 12 years ago, in which the farmers in some localities, in the desire to become suddenly rich, had planted such extensive hop-yards, that they could only get the crop picked by bringing in the scum of distant cities, and when they were harvested, the hops would not sell for the cost of producing them. Before the high prices already paid, and the still higher ones likely to be paid for hops, have had their effect, and have induced many of our readers to undertake hop-growing, we would ask them to consider a few points which the flattering accounts of successful hop-growing altogether omit. There are several crops which, for want of a better name, we have in former years called "Speculative Crops." These are crops outside of any regular system of farming, their products having no relation to any of the usual products of the farm. These crops, usually produced at a large expenditure of the ordinary stock of manure, must be sold off at current rates; the farmer can not usually afford to keep them for a higher market, and they can not, as a general thing, be consumed on the farm, either by the farmer's family or by his animals.

Among crops of this speculative class we include Onions, Tobacco, Broom-corn, Castor-oil Beans, Teasels, Peppermint, and Hops; to some extent Flax, at least when grown for its seed only, belongs

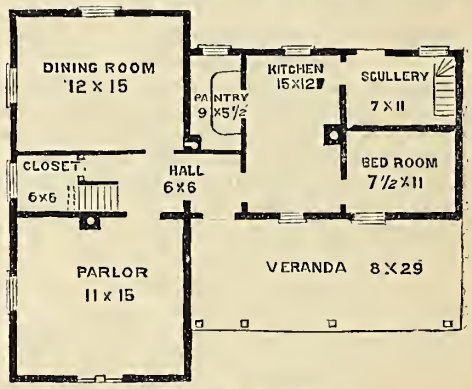


Fig. 4.—FIRST STORY PLAN.

in this class. All of these crops have proved, and in the future will no doubt prove highly profitable—under certain conditions. We have termed these "speculative crops," in part for the reason that their products being limited, and the quantity raised being readily known to operators in the markets, they are made use of by speculative dealers, who, by controlling the market, can suddenly raise the price, and holding the whole stock, get any sum they choose to ask. Whenever high prices are quoted for these products, recollect that these high prices do not go to the farmer who produces, but to the speculator who sells them.

Each of these crops has its peculiarities which makes it difficult for the average farmer to produce it; this is especially the case with Tobacco, which requires large houses in which to properly cure it, and with Peppermint. Here the crop has not only to be raised, but it must be manufactured, as it is only marketable in the shape of Oil of Peppermint. This involves considerable outlay for apparatus, which is useful for nothing else, and its proper use requires a kind of skill which farmers, and indeed people in general, have not had occasion to acquire. But let us take the Hop crop, which is at times very profitable. This is a crop, the demand for which, though large, is limited; if it fails in a large hop-growing country, as in England the present

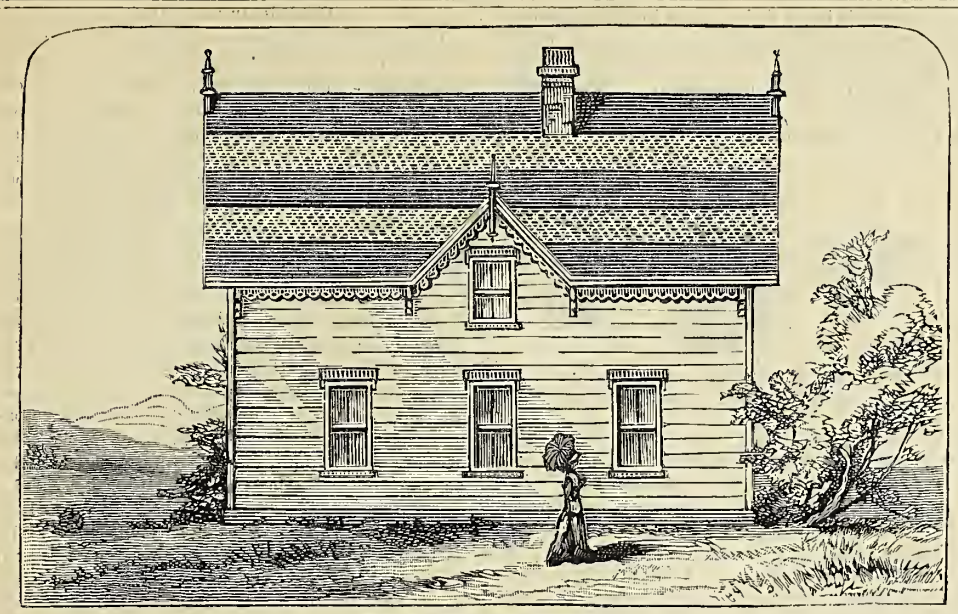


Fig. 2.—SIDE ELEVATION.

year, the price at once doubles, and by the time the next year's crop is on the market, the price may be quadruple that of the average. Under these conditions the enterprising American farmer feels that he is safe in establishing a hop-yard, and in doing this at a considerable outlay. Here one of the peculiarities of the crop is, that after the plantation has been made, the vines must grow for *a whole year* before any returns can be had. In this year, which his plantation must have in order to become productive, the countries which failed the year before may have abundant crops, and before he has harvested a single bale, the price may fall to the average or below it. Aside from the marked fluctuation of prices, there are other difficulties attending the hop crop. The need of pickers has already been alluded to. The fact that there must be at hand an abundance of cheap labor at just the right time, makes hop-growing in sparsely settled localities difficult, if not unprofitable. In some seasons, and in particular localities, there appear hordes of insects that must be fought vigorously to save the crop. After the hops are raised and picked, they are not marketable unless properly cured and baled. This calls for peculiar kilns, buildings put up for the express purpose, and upon careful treatment in the curing largely depends the quality, and consequently the price.

"Then," some will say, "you advise the American farmer not to grow hops?"—By no means. So far from this, we several years ago offered premiums for Essays upon Hop Culture, if not to advocate it, at least to furnish a reliable guide to those who would undertake it. The object of this article is not to deter farmers from growing hops, but to prevent their taking up the culture inconsiderately, impelled thereto by a sudden rise in the market. Our farmers—some of them—can make money by growing hops—all can not. Let whoever is attracted to hop-growing by present high prices, consider the matter in the light we have presented. Let him make sure that his soil and surroundings are suitable for the crop, and if he can afford to wait a year after planting, buy the needed poles and put up kilns, and be at all other outlays before he can receive any returns. If he finds that he can add a hop-field to his regular farm, then let him do so—making up his mind, if he goes into this special culture, to *stay in*. If he will be discouraged by one, two, or more bad years, let him keep out. We have no doubt that, properly pursued for, say ten years, it will in the long run be found profitable, sometimes very profitable. What we suggest as to hops, applies to all special cultures. They may be made profitable if intelligently started and persistently carried on, taking the bad years with the good. If one is unable to do this, let him stick to the regular farm crops.

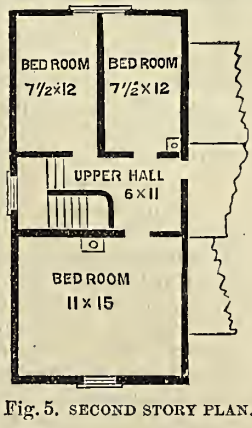


Fig. 5. SECOND STORY PLAN.

Canning Tomatoes.

In a recent number of the *American Agriculturist* I read some remarks regarding the preserving of tomatoes, and a lack of success. The *modus operandi* is very simple, and why the many who fail do not succeed, I cannot understand. The main point to look after is the jar. It is of no use to put tomatoes into a jar that is not *perfect* throughout. Many persons, after using the contents, and cleaning the jar, set it upon a shelf, and the covers are put into a box or other receptacle, and after being *jumbled* together for several months, it would be surprising if the covers, and especially the glass ones, came out whole; a small nick out of the sealing edge of a glass cover will cause the fruit in that jar to spoil.

I have seen persons use rubbers that had been in use for years, and were so stiff and hard that they would not stretch; such rubbers are useless. A good rubber should be soft and pliable. The tomatoes should be thoroughly cooked. My way is to stew them in a large kettle, all at once. Take your jar, set it on a cloth wet in cold water, pour in enough cold water to cover the bottom well, then fill up with boiling water. As soon as the jar is thoroughly hot, empty the water, and fill at once with the hot tomatoes, brimming full, then put on the rubber. Be very careful that no seeds get under it; put on the cover, and screw down. If a glass top, it should be warmed the same as the jar; continue screwing down the cap as the jar cools. If done carefully and quickly, success *will* follow. Many people fill their jars too slowly, giving too much chance for the cold air to get in, and the fruit to cool. These remarks will apply to the canning of any kind of fruit.

Peaches I can differently. I pare my peaches, taking care that they are in good condition, ripe, but not mellow, put in as many whole ones as I can, and pack all round the sides with halves and quarters as close and tight as I can, without bruising; then I put in 7 ounces of sugar, and fill up with water. Put on the fire a kettle with cold water, set these jars that have been filled in it, keeping them off the bottom by a grating or something similar, and so they will not touch each other; put on the covers, and screw the ring down a little (but not the rubbers). After boiling hard for ten minutes, take out and fill up with boiling water, put on rubbers, and seal as above. People say my peaches are very nice. H. B. C.

The Ailanthus Tree.

After being yearly abused in the journals, especially by those of New York City, the Ailanthus tree has at last found an advocate in one of the New York Daily papers. In its issue of July 26th last, it had an article on the tree, which differs from the majority of those in the daily papers on such subjects, as it plainly indicated that "the writer had some knowledge of the subject." This article mentioned the great defect of the Ailanthus, its odor during its time of bloom, whereupon a correspondent sends a note, published in the same paper on July 29th, which says: "There are assuredly more kinds than one of this tree. On my place on the Passaic River, near Belleville, are some half a dozen large Ailanthus trees, the branches of some of which reach within twenty feet of my bedroom window. Every year they are filled with blossoms perfectly inodorous, and subsequently heavily freighted with immense bunches of seed of a rich red-brown color. Further away are four large trees precisely similar, except that the seeds are yellow. None of them are in the least offensive when in blossom—unlike all others I have ever seen." We quote this, as it brings up a matter regarding the tree not generally understood. It has often been stated that the Ailanthus bears its staminate and pistillate flowers upon different trees; that the staminate flowers are the ones which give off the disagreeable odor at flowering time, and one has only to plant the pistillate, or fruit-bearing trees, to be freed from the unpleasant smell. Unfortunately this is not true. The flowers of the Ailanthus are of three different sorts; there are: 1st, flowers with stamens only; 2nd, flowers that have both stamens and pistils, as do the majority of our common flowers; 3rd, flowers that produce only pistils. The first two kinds have stamens and are odorous. The second and third have pistils and produce fruit. The second kind produces fruit abundantly, but it also has the offensive stamens, and it will be seen that the fact that a tree has its showy fruit-clusters, is no assurance that it will be inoffensive. It is the third kind only, the flowers of which have pistils solely, can be relied upon as inodorous. Plants which present this irregularity are called polygamous. It is only when trees, like those of the writer of the above note, are found to be without offensive odor, that we can be sure of the matter. While we can not assert that a tree of this kind, one with pistillate flowers, will always continue to bear such, yet from analogy we judge that it is highly probable that it will. To avoid the chief objection to the Ailanthus as a street tree, and to its planting near dwellings, we must propagate not only from those individuals which show their ornamental clusters of fruit, but which at the time of blooming are also without odor. The tree is propagated with great ease from cuttings of the root. When an inodorous tree is found, it is not necessary to destroy it to propagate it. A share of the smaller roots, from an inch down to a fourth of an inch in diameter, may be taken off in fall, without essential injury to the tree. These pieces cut into lengths of two or three inches, and placed in a well prepared bed, will nearly all make small trees the next season. The Ailanthus is valuable for timber, and as fuel, and beautiful as an ornamental tree; it will flourish in the poorest soils, and grow rapidly under the most adverse circumstances. In real value it takes a high rank, and it is desirable that every effort should be made to avoid its only unpleasant feature.

Blanc Mange is an acceptable addition to the supper table, and easily made. Take a handful of Irish Moss, wash thoroughly in several waters, add a few pieces of stick cinnamon, and tie up loosely in a piece of mosquito netting. Boil about fifteen minutes in 1 quart of milk; turn the milk into a mould or bowl previously wet with cold water; let it stand until cold. When ready for use, turn it out upon a dish. If boiled enough, it will keep its form. Eat with sugar and cream. The moss is very cheap, and if properly washed is free from all unpleasant taste. A. W.

Insects Within the Potato Stalks.

The injuries inflicted by the Colorado Potato-beetle, by general consent regarded as "*The* Potato-bug," are so extensive and thorough, that those due to other insects are in a great measure overlooked. There are several insects that, in the absence of the Colorado-beetle, would cause potato-growers much anxiety for the safety of their crops. Among these are two which confine themselves to the interior of the stalk or vine of the Potato; here they live and make their growth, and by the time this is completed, the stalk is dead. Both these stalk-infesting insects are more abundant in the Western and Southern than in the Northern and Eastern States, but we have an example in the one from Colorado, of what a potato-insect can do if it undertakes to travel, and no locality can be regarded as safe from insect invasion, unless climatic conditions prevent.

The Potato-Stalk Borer

is the larva of a moth (*Gortyna nitela*). The moths are so numerous that entomologists find it convenient to divide them up into families, and this insect belongs to the Owlet Moths (*Noctuidæ*), which are distinguished, among other characters, by their rapid flight at night; they are attracted by a light, and we are apt to have many species enter the house and present themselves to our notice. The Corn-worm, the destructive Army-worm, and the several Cut-worms, are all too well known larval states of moths of this family. Though called the Potato-stalk Borer, the parent moth does not confine herself to the Potato in laying her eggs; she also deposits them upon the related Tomato, as well as on the Dahlia, the Aster, Lily, Salvia, and other garden flowers, and has been known to do so on Indian Corn, and even on the stems of the Peach and Currant. Being a native insect, it attacks several wild plants, especially the common Cocklebur (*Xanthium*), which is quite too abundant from East to West. The immature larva or borer and the moth are shown in figure 1. The larva, of a livid hue when young, and lighter colored when mature, lives in the stalks of the Potato and other plants, leaving them usually the latter part of July, and descending to a short distance below the surface of the ground, forms its chrysalis some time during September; it is of a mouse-gray color, the front wings finely sprinkled with pale yellow, with a curved pale line across them. There are good reasons for supposing that the insect passes the winter in the perfect or moth state, hiding away and becoming torpid, only arousing with the warmth of April and May, to lay its eggs upon the stems of the Potato and other plants. When the borer is suspected to be within the stem of the Dahlia and other flower plants,

Fig. 1.—MOTH AND LARVA OF THE POTATO-STALK BORER.

from their wilting, a close examination will show where it entered, and it may often be cut out and the plant saved. In the potato-field its presence may be detected by the wilting of the vine, and such stems should be cut off and burned, to prevent the spread of the insect. Another insect attacks the Potato in a similar manner, but belongs to a different order of insects.

The Potato-Stalk Weevil

is a small beetle (*Baridius trinotatus*), shown in its perfect state at *c*, fig. 2, the line at the side indicating the real size. Its general color is bluish or ash-gray, with three indented, black spots on the lower edge of the thorax. The female makes a slit in the stalk with her beak, and deposits in this a single egg. The grub is soon hatched, making its way to the center of the stalk, and working downwards towards the root. The grub, when full grown, is but a little over a fourth of an inch long, whitish, and legless; it is shown at *a*, enlarged. The absence of legs distinguishes it from the Stalk-borer just mentioned. It also differs from that in not leaving the plant to form a chrysalis in the ground, but becomes a pupa within the

Fig. 2.—THE POTATO-STALK WEEVIL.
a, Larva; *b*, Pupa; *c*, Weevil.

stalk where it has lived (*b*, fig. 2), and appears as a beetle late in August or early in September. No doubt it passes the winter in the beetle state. It has not been known to attack any plants besides the Potato, which in some localities has been much damaged by the weevil. The insect is more abundant in the Southern and Middle States than further North. The remedy suggested for the borer, destruction of the stem containing the larva, is the only practical one for this insect. If farmers, when they first observe a vine to wilt here and there, would search for the cause of the trouble, and carefully destroy by fire all stems that are found to contain larvæ within them, they could do good service in keeping these insects in check.

Bee Notes for September.

One of the features of the apiculture of Europe is the holding of large exhibitions of bee products and apiarian implements. The bee journals of Great Britain, France, and Germany, are full of accounts of these large and interesting Honey Shows. So great is the skill displayed in making the exhibits, and so attractive are the displays, that it is no rare thing for the Shows to be visited by kings and queens. Surely the European apiarists find it advantageous to make these exhibitions, or they would not continue them year after year at great expense of time and labor. Not only are these meetings noted for their beautiful honey shows, but numerous essays, lectures, and discussions in connection with them, serve as educators in apicultural science and art.

Exhibitions in America.

Heretofore the honey exhibits in America have consisted of a few pounds of second-rate honey and a little beeswax, tucked away in some obscure corner, and sandwiched in between maple-sugar and syrup and sorghum-molasses. The premiums have ranged among the cents, and occasionally, in some unusual cases, have even reached a dollar. There was nothing to induce producers of honey to make exhibits, and still less to excite the interest or attention of visitors. Of course bee-keepers are to blame for this state of things, as no business demonstrates its importance at expositions unless its patrons possess sufficient enterprise to push it forward. It is very strange that American apiarists who have gone to the front in every other line of apicultural progress, have been so slow to recognize the great opportunity to advance the interest of their pursuit by encouraging and patronizing these exhibitions of bees, honey, etc. Owing to the fact that some of our leading bee-keepers had visited Europe, and witnessed the substantial advantages that resulted from these Honey Shows, there were two successful exhibitions of this kind held in America last year. These were at St. Joseph, Mo., and at Toronto, Canada, and so attractive were they, that no other part of the Fairs received so favorable comment from the press. Tons of honey were on exhibition at Toronto, and thousands of pounds were sold there. Bees were also exhibited and manipulated at the Fair, and the exhibit was farther aided by the display of all the numerous and valuable implements and appliances that aid the bee-keeper in his work.

Exhibition at Fairs.

The place to hold these exhibitions is in connection with the several State and County Fairs of the country. The requisites to success are generous premiums, in keeping with the importance of apiculture, a separate building in which to hold the display, a room fitted with gauze, so that the bees can be manipulated each day, with no fear from stings, even by the most timid person. The honey should be taken in quantities, both comb in sections and extracted honey in jars and tin pails. This should be put up with the greatest neatness, and labelled in an attractive manner. Some of it should be put in glass crates, so as to teach visitors how to present the honey for sale at the groceries. There should also be a large exhibition of wax, foundation, implements, and extractors, so that the decision of the Judges, who should be experts, may carry weight with it. The best colony of bees should be taken, so ventilated that the bees will not suffer, and arranged that they can be so shown that every visitor may see how easy it is to handle bees without harm. Wire gauze may be so arranged around the hive that there need be no danger of exciting the fears even of the visitors. If the bees are properly ventilated, and fed a little every day, they will not suffer by being taken to the Fairs.

The Honey Crop.

Owing to the cold, wet season, this promises to be a very poor honey year throughout the entire country. The white clover and raspberry harvest is over, and the yield was very light. Basswood offered a generous bloom, and yielded somewhat better than did early clover. Those who have a chance for an autumn harvest, have still reason to hope. We have one colony which has brought in from one to two pounds daily during the past week, and has not gained more than three pounds, except during two or three days. The best record was on a sultry day, when the gain was eight pounds. Possibly some of this might have been moisture collected by the honey.

Weeds Going to Seed.

Just at this season, when cultivation is mostly over, and the main crops harvested or laid by, we are most in danger of allowing our old enemies, the weeds, to go to seed. This is a most culpable and expensive practice, entailing untold labor in future years. We have had in hand the present season, an old garden, where every weed was left undisturbed, and no crop was planted last year. Their name is legion of almost every variety that infests Connecticut soil, and some that we never met elsewhere. Pig-weed, milk-weed, dock and burdock, dandelion, fennel, mustard, quack-grass, plantain, purslain, jack-in-the-pulpit, mallows, and divers other sorts have sprung up in their season, and disputed possession with the crops planted. There is only one excellence about them, they insure frequent cultivation of all crops, if you would have any harvest. The labor of subduing one year's seeding of these pests is immense. In the garden especially, no weed should ever be allowed to go to seed. When one crop is off, put in another, and when the last is gathered, plow, or rake, or harrow, and let the frost have free play at the soil. CONN.

Keeping Grapes.—In Europe a method of preserving grapes is now very generally followed. The cluster is cut with a piece of the cane still attached, and the lower end of the cane is inserted in the neck of a bottle containing water. Grapes thus treated are kept in a perfect manner for a long time. The European journals have figured racks and other devices for holding the bottles, in such a manner that they may sustain the weight of the fruit, and also to allow the clusters to hang free, and much as they would upon the vine. We are not aware that this method has been tried with our native grapes. These, even at the holidays, when the price is the highest, sell for too little to make this method of keeping profitable, but for home use, the experiment seems to be worth trying.

"Bob White," or the American Quail.

BY J. M. MURPHY.

The Quail of the Atlantic States (*Ortyx Virginianus*), which is also known as the "Bob White," and in the Southern States as the Partridge, is abundant as far West as the Rocky Mountains, and even beyond that chain now, as it has been introduced into Utah, Oregon, and other places. This species has lengthened feathers on the crown which can be erected into a crest; a line over the eye: the throat is whitish, bordered with black. The vertex, neck, and breast are brownish-red, the remaining under parts being white and marked with black crescentic bars; and the sides are streaked with brownish-red, the upper parts being varied with tawny, black, gray, and chestnut. The color of the female is paler than that of the male, and the forehead, throat, and the line over the eye are buff instead of white. There are two varieties of this species in the South, one being confined to Florida, and the other to Texas. The difference between them and the Northern bird is not very great, and consists principally in the smaller size and darker plumage of the variety *Floridanus*, and the paler and grayer hue of the variety *Texanus*, which is the common bird of Texas. The nest of the Quail is a common affair, being merely a slight excavation or a natural depression in the ground which is lined with dry grass and a few feathers. The hen lays from fifteen to twenty-four white eggs, and sits on them three weeks, generally hatching all of them. When the young appear they are able to leave the nest, and though they are veritable mites of down, they are able to follow their mother. They are exceedingly cautious little creatures, for the moment the old bird sounds an alarm they scatter in every direction and hide in the grass until the reassuring voice of their guardian summons them to her side. If a dog or a cat approaches the brood, the mother pretends to be wounded, and flutters far enough ahead of it to keep out of harm's reach, and when she has led it some distance away from them, she rises in the air with a cluck of joy and triumph, and returns to her family, which she soon gathers about her by endearing calls. Although the Quail is a timid bird, yet it has been known to associate with the barnyard fowl, especially in winter, and to remain around the outhouses of a farm for weeks at a time. Its eggs have also been hatched by a hen, and the chicks followed their foster mother until the ensuing spring, when, through some overpowering instinct of nature, they left her and sought their free companions. Instances are known, however, in which the birds were not only content to remain in confinement, but also to lay eggs which proved fertile when hatched under a Bantam hen or either of the parent quails. It is often rather difficult for a captive female to hatch her own eggs, as the male dallies with her so much, and uses all his powers of fascination to such an extent, that he frequently induces her to desert her nest, in order to prolong the love season. The Virginia Quail has two broods in a year if the weather is fine and the summer long, but in the more northern regions it raises only one, unless the first eggs laid should be destroyed, and then it may try to raise another. While the female is hatching, her mate sits on a shrub or a fence close by, and whistles his soft notes of "Bob White" by the hour, as if he were encouraging or comforting her with words of endearment. Although the bird derives its ordinary name from these two notes, yet it has a variety of others which it uses when a bevy assembles or when it meets its kindred out for a promenade.

The Quail eats grain, insects, and sometimes grapes, but it is content with a very small quantity of the latter food, hence the statements made against the Valley Quail in California, that it destroys vineyards, are partially founded on a misapprehension. To poison it by the thousand on this ground would therefore seem to be wrong, for it often more than atones for any harm it may do by the quantity of Chinch-bugs and other insects it destroys, and which, but for it, would lay waste the grain fields. The favorite feeding resorts of the "Bob Whites" in fine weather are the stubble-fields which are close to water. They frequent these each morning and evening, but seek cover in the bushes, hedges, and fences during the day. They lie in concealment nearly all day in rainy weather, and if tracked by dogs they try to escape by running, so that a man may have to follow them for several hundred yards before he can get near enough to flush them. They hie to the timber for shelter in snowy weather, but return to the field in a day or two after the storm has ceased. If they are flushed then they will fly for the first convenient cover, and try to hide, or to escape by running through the bushes as fast as they can. They often double like a hare on such occasions, and give a dog—unless he is exceedingly staunch and keen-nosed—a great deal of trouble to trail them. If one of the bevy calls soon after seeking shelter, a person may expect all to flush again in a short time, as it is a proof that they do not like their refuge. Should the sportsman desire to know their place of retreat, in case they keep silent, he can learn it by uttering their call, as he is almost sure to receive an answer, especially in the early part of the season. The call must be correct, however, or it will only make them scamper off. When the cold weather approaches, and the ground becomes frozen, quails frequent the more open stubble-fields in search of food. If they are flushed then they rush for the tall grass or bushes, and lie so well that a whole bevy may be killed one by one, if a person has a good dog. Old birds are so cunning, however, that they may not await the approach of even the steadiest setter, but fly to the thickets or woods, if any are near, on catching sight of him.

"BOB WHITE," OR THE VIRGINIA QUAIL, (*Ortyx Virginianus*).

The bevies leave the high grounds in October and march or fly to the banks of streams or lakes, but they return in November, which is called the "running season," on acount of their wildness, and the fact that they will not lie before a dog, but run ahead of him as fast as they can, and seek shelter in bushes and thickets where it is impossible for him to follow them. They may be found in grain fields up to eleven o'clock in clear, frosty weather, but after that hour they resort to the banks of streams and sloughs, and lie on the sunny side of fallen logs and preen themselves. They go to the stubble again in the evening, and when they have dined they rise suddenly in the air and drop in a neighboring field, taking excellent care not to run about much, for fear of leaving a trail for their foes to follow. They generally sleep in a circle, with their heads turned outwards, so as to better guard against a surprise; and if they are not disturbed they frequent the same roosting-place for several nights in succession. Although they have many enemies, the worst is the hawk, which skims noiselessly over the grass or darts down upon them suddenly, from a high altitude. If they espy this deadly foe in the winter, when the ground is covered with snow, they dash into the fleecy shelter and soon make a hole large enough to protect them from all danger. The best time for quail shooting is November and December, when the frosts have wilted the corn-stalks and deprived the bushes of their thick covering of leaves. The sportsman should be early afield, for as soon as the sun appears the birds leave their roosting places and commence running about. Their scent is then easily found by a dog, especially if they are plentiful, and they generally are at that season, as they congregate in large bevies. When they are flushed they fly for the first cover, then scatter, and lie so close, in many instances, that a person may kill the majority of them, as they rise singly or in pairs. The best dogs frequently fail to detect birds which are actually under their noses. The cause of this is attributed by some persons to the power the quails have of withholding their scent, while others assume that it is the result of "too much scent being scattered about," as the birds run in various directions when they alight, and thus make it impossible to locate them. Some think that the creatures are so terror-stricken on reaching cover that they press the feathers close to the body, and thus prevent their scent from escaping. Either of the latter two theories seem more plausible than the first, as it does not seem possible for a bird to have the power of voluntarily withholding the odor of its body. The only way to rout the quails, when they baffle the dogs, is to thoroughly beat the ground or bushes, as they often wait until they are almost kicked out before they take to the wing. The Virginia Quail is the only species of its genus that really affords good sport, as it is the only one that will lie any way well to a dog. It is also scattered over the greater part of the country, from Massachusetts to the Rocky Mountains, but it is far more numerous in the Western States, where it is nothing unusual for a man to bag twenty or thirty brace in a day, with a muzzle-loader. A pot-hunter has boasted of killing two thousand in a little over five months, and a person who considered himself dexterous with the gun was known to kill two hundred and ninety in three hundred shots. The birds are easily bagged in the open ground early in the season, as they fly straight away—if a person does not become nervous from the rapidity of their flight. Excitable people should try to give them a start of twenty or thirty yards before firing, as that distance will enable the shot to scatter, and increase the possibilities of a hit. They ought also to take deliberate aim, as snap shots are not so likely to be successful as those delivered with a prompt but steady swing. If the birds are not too wild, a charge of three drams of powder and an ounce and an eighth of No. 10 shot will be found sufficiently powerful to bring down the toughest old cock, going straight away at full speed; but No. 8 is better at a later period in the season, when the birds are exceedingly wild, as it has a velocity of seventy-one feet a second greater than No. 10 shot. It may also be stated that a ten-guage gun will send its charge one hundred feet per second faster than a twelve-guage can, and is therefore the best to use throughout the year.

Why Does the Butter Come?

BY PROF. G. C. CALDWELL, CORNELL UNIVERSITY.

It is known that the fat in the milk is in the form of minute spherical globules, and that these being lighter than the surrounding liquid, or the *milk serum*, as it is conveniently called, collect mostly at the surface when the milk is allowed to stand quietly for a time, and that when either this cream or the milk is violently agitated so as to throw these globules against one another, they stick together in larger and larger numbers until finally visible clumps of butter appear. All this we know full well; but wise men of science and of practice have sought for many years for an explanation of these familiar phenomena, without being able as yet to find one that is in all respects so satisfactory as to meet with universal acceptance.

The oldest theory of any importance, and one that is familiar to many, is that each little globule of fat is enclosed in an envelope or sac of albuminous matter, and that as long as these sacs are whole the globules of fat will not stick together any more than will two pats of butter nicely wrapped up in cloth, or two sausages in their skins; but these sacs are supposed to be very thin and tender, and to be weakened by acids, and that when they are knocked together, especially in the acid cream, their envelopes soon get worn through or torn, and the fat escapes and naturally collects together, while the remains of the delicate sacs in the buttermilk make it turbid. This explanation is generally attributed to a Frenchman, who announced it in 1842; it looks plausible, for it appears to explain many of the phenomena satisfactorily; but the one most serious difficulty with it is that so many eminent microscopists have searched for these sacs or parts of them, without being able to identify them. When we find all who have the necessary experience to enable them to understand correctly what they see with it, uniting in the declaration that, according to the best of their knowledge, the fat globules are not encased in membranous sacs, we can safely affirm that the theory lacks its most essential foundation stone, and that the question, why does the butter come, must be answered in some other way.

A second theory is that the fat globules, though entirely bare, are nevertheless so closely surrounded in the milk, and especially in the cream, with a sort of thickened milk serum, that they are kept apart until, by being thrown forcibly together in the churn or in any other way, the slimy layer is momentarily squeezed out from between them, and they adhere. Soxhlet, to whom we owe many valuable contributions to our knowledge of milk, explains why the butter comes, that has many strong points in its favor. Butter fat melts at about 90° Fahrenheit; but he takes the position, to begin with, that even in cold cream the fat is still in liquid form, as it was in the warm milk just from the udder—that each globule is a globule of a liquid, and not of a solid, as might naturally be expected at low temperatures. That a substance may retain its liquid form at a temperature much below that at which it remains solid when once solidified, is a well-known physical law, and he illustrates it for this particular case by interesting examples which I can but very briefly notice. Water, if allowed to stand in perfect quiet in a cold room may fall to several degrees below its natural freezing point without freezing; but as soon as the glass containing this under-cooled liquid is moved so as to agitate its contents, perhaps ever so little, freezing follows instantly. Many of our readers may have themselves observed this phenomenon. When the liquid is divided up into very fine particles it is still easier to carry it to very low temperatures without freezing; and this subdivision may be pushed so far that the smallest globules will require violent shaking up as well as a low temperature for their solidification. Again, it is a well-known physical phenomenon that when a liquid is thus divided up into very small globules, which are suspended in the midst of another liquid with which they do not mix, in the same manner as oil will remain entirely unmixed with water, these globules do not run together as they would naturally be supposed to do; on the contrary, they resist any attempt to make them unite, and are more likely to subdivide still further if pressed together.

It is quite possible, then, for the globules of fat in the milk to retain their liquid form, even when the milk is very cold; and in remaining apart, they only do what any liquid globules would do under the same circumstances. Now when this mass of liquid fat globules in the cream, cooled down below the temperature at which the fat of which they are composed is solid, is shaken up in the churn, the same result should follow as when the tumbler of under-cooled water is shaken; the globules solidify suddenly, and then they adhere when thrown against each other; this is Soxhlet's answer to the question—Why does the butter come? If this is the correct answer, then freezing the milk so thoroughly that even the fat solidifies should at least in part take the place of churning, since the first labor of the churning is spent in getting the globules into the solid form so that they will adhere. Such a result was obtained in one experiment by Soxhlet. A quantity of milk was divided into two equal parts, one which was kept at about 68° Fahrenheit, while the other half was completely frozen, and then thawed out by putting the vessel in water at 68°; both portions of milk were then churned as nearly as possible in the same manner in small glass churns, and that one which had been frozen was brought in two minutes to the condition in which the butter was just ready to come, while the other portion required eleven minutes to reach the same condition.

But even this theory, which appears to be so fully in accordance with the laws that govern the behavior of liquids, and which does not seem to assume anything opposed to the facts, and was consequently very widely approved, is not allowed to have undisputed possession of the field. Storck, an eminent Danish investigator of milk, does not find that the question put at the head of this article is satisfactorily answered. His answer, however, as well as perhaps an attempt to answer that other question which sometimes presents itself to the practical dairyman—Why doesn't the butter come?—must be deferred for consideration until another time.

The Kentucky Coffee Tree as a Fly Poison.—Mr. "G. F. H.," Albemarle Co., Va., writes us: "Back of our house here, and overhanging the piazza, is a very large "Coffee Tree." Though this locality is infested, like Egypt, with a plague of flies, we have never suffered any serious annoyance from them. One year this tree was nearly stripped of leaves by a cloud of Potato Flies (the blistering fly), and we feared that the tree would die from the complete defoliation. In three days, the ground beneath it was black with a carpet of the dead corpses, and the tree put out new leaves, and still flourishes. For ten years we have used the bruised leaves, sprinkled with molasses water, as a fly poison. It attracts swarms of the noisome insects, and is sure death to them. There are, I am convinced, two distinct varieties of the tree. This one rarely bears seed, but multiplies by numerous sprouts sent up at a great distance from the trunk—often 40 feet off; the other is covered with large pods. [The staminate and pistillate flowers are on separate trees.—ED.] I doubt the efficacy of the latter as a fly poison, since several of this kind grow about the houses here without the beneficial effect having been noticed.

The Angora Goat.

Angora Goats can not bear confinement; indeed a wide range is an essential condition to their success. It must be borne in mind that they are omnivorous, so far as vegetable growth is concerned, and in flocks must be carefully herded, to prevent depredations upon cultivated grounds. For this reason, island localities are especially suited to this industry. Already some of the islands near the Pacific Coast have been occupied by goats, and we have no doubt there are many islands on the Atlantic Coast that may be profitably occupied as goat pastures.

It is a common impression that the Angora and the Cashmere Goat is the same. This is a mistake. The animal which furnishes the material for the costly shawls of Cashmere is found upon the southern slopes of the Himalaya Mountains, near the regions of perpetual snow. While the long fleece, or "Mohair," is the product for which the Angora Goat is valued, that of the Cashmere Goat is a very fine, downy substance, or "shawl wool," found beneath its thick, coarse hair, and known as "Pashum." This is combed out in the spring, and in the country where it is produced is, when cleaned, worth from $1.50 to $2.00 per lb. But very few attempts have been made to introduce the true Cashmere Goat into this country. A pair was imported in 1848, but the male soon died, and it is probable that they can only be successfully kept in very elevated mountain localities. Even could they be acclimatized, there is as yet no demand for their product, which, in the native country of the animals, is only worked up by a tedious process of hand labor, which could not be introduced in this country. It is probable that when the Angora Goat becomes better known, its whole value will not be found in its fleece. Its flesh is said to be of excellent quality; indeed those who have eaten it in California say that it is preferable to mutton or venison. There is a general prejudice against the flesh of the goat which is entirely unfounded. The flesh of a kid is quite as acceptable as that of a lamb. That of a well fed, year-old animal, if it has had a free range, is as rich and juicy as mutton. The writer, while living

upon the Mexican frontier, has several times served to a dining party a leg of young goat, which was eaten as mutton. The name of the animal was not mentioned, but the fact that the plates were sent for more showed that there was nothing unpleasant about the meat. If the Angora will give better meat than a young, well fattened common goat, it should be encouraged as a source of food. The milking qualities of the Angora are said to be much superior to those of the common goats, and the grades are reported to be abundant producers of very rich milk. The keeping of goats as milk producers appears to be, in this country, at least, confined to those who live upon the outskirts of large towns, where grassy roadsides and commons afford pasturage for these animals. In such localities the squatters and dwellers in shanties keep many goats, which are a great annoyance to the neighborhood when allowed to get loose. In this country, beyond this keeping of the "Nannies" for milk, and the breaking of the "Billies" to a rude harness, to be sold singly or in pairs to the wealthy, but little attention has been given to the common goat as a productive animal. There are large tracts in the far Southwest, in New Mexico, Arizona, Western Texas, and parts of California, where goats may be profitably kept, even the common kinds, if only for their skins. The skins of the goat are used for morocco leather, and largely for gloves. Very few are aware of the extent of the commerce in goat skins. The annual importation of goat skins into England from the East Indies and Africa is stated, on good authority, to be over four millions of dollars. The hair of the common goat is woven into a coarse "linsey," and it is also spun into very durable ropes. The horns of the goat are used for the handles of knives and forks, and the tallow makes excellent candles. In his new and valuable volume just published on the Origin, Culture, and Products of the Angora Goat, Dr. John L. Hayes, President of the Tariff Commission and Secretary of the National Association of Wool Manufacturers, furnishes the following information:

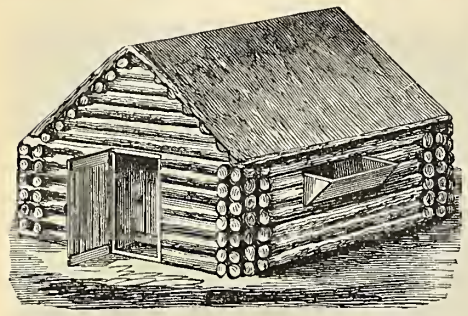
The Angora Goat (*Capra Angoriensis*), specifically different from the common goat (*Capra ægagrus*), is derived from Falconer's goat (*Capra Falconeri*), inhabiting the mountains of Little Thibet, in Asia, and is probably of comparatively recent origin in Asia Minor, its present most important habitat. The Angora Goat is completely acclimated in the United States, and the race appears to have been actually improved in this country in favorable locations and under intelligent culture. It survives in all sections of this country where there is not an excess of moisture; but is most advantageously kept in localities where there is a range for open-air feeding and pasturage throughout the year, and where there is no necessity for winter stabulation. The notion insisted upon in Asia Minor, and formerly entertained here, of the necessity of a high altitude for the successful culture of the Angora, appears to be negatived by experience in this country and elsewhere. Regular summer and winter food is an important factor for the production of the best Angora fleece, which in this country starts to grow the first of August, and stops growing in January. An indispensable condition of success in the Angora husbandry in this country is a provision of acclimated stud flocks of thorough-bred bucks and ewes for regenerators, meaning, by thorough-breds, Angoras imported from Asia Minor of unquestioned selection, and their progeny.

The most rapid and advantageous method of forming large flocks of Angoras is by crossing thorough-bred Angoras upon common goats, and the ewes of the resulting product, with the object of merging the common race in the superior. Good results are obtained at the fifth cross. It is indispensable that thorough-bred bucks should be invariably used for propagation. Millions of acres in this country, unsuitable for sheep husbandry, may be advantageously occupied by flocks of Angoras, which may be grown at half the cost of sheep in their most favorable locations, and with at least an equal return in the product of the flocks. There is now a complete assurance of a domestic market for all the fleece of the Angora, of good quality, that is likely to be grown in this country for many years. While extraordinary profits are not to be relied upon permanently in any branch of production open to competition, the Angora husbandry offers opportunities in favorable localities in this country, equal at least to those in any other branch of stock-growing, provided sufficient duties upon the products of the Angora and mohair industries are preserved.

A GROUP OF ANGORA GOATS.—*Engraved for the American Agriculturist.*

A Log Root-House.

It is not well to delay the building of a root-house until the time for harvesting the roots. The essential points in a good house for the storing of roots are ; protection from the frost, dryness, and proper ventilation. For those who live in a wooded locality, a house built of logs is cheap and very satisfactory. Such a root-house is shown in the engraving. An excavation about three feet



A LOG ROOT-HOUSE.

deep is first made, and the log walls built around it. The walls should be double, at least a foot apart, between which earth is placed; the roof is made of timbers, with earth above, thick enough to keep out the frost.

Pigs for Profit.

BY COL. F. D. CURTIS.

The care of pigs in summer can be made less troublesome and more profitable than is usually the case. Unless confined in restricted quarters, pigs are liable to break out and do mischief. They are not adapted to being kept with other stock, as no animal likes to feed after pigs, and while this dislike is so marked that animals will not eat out of the same vessel from which pigs have been fed, or in which they have "mussed," they may be forced, from hunger, to eat the grass in the pasture where they run, but it is not wise to compel them to do so. For these reasons, farmers generally keep pigs shut up in pens, where they must be supplied with all the food they require. Sometimes this condition is improved upon by allowing them a small range on the ground. This is better than close confinement in the pen, as it makes them more comfortable and healthy, but it does not lessen very much the amount of care they require, as the supply of food is soon exhausted. It is a better plan to have the enclosure so large that the pigs cannot readily consume all the grass and make it bare of any kind of vegetation. When pigs are not rung, to prevent their rooting, they will soon spoil a small enclosure, and also damage a larger one. This injury to the pasture can easily be prevented by inserting in their snouts two or three rings made of malleable wire. Care should be taken to have the ends of the wires straight, so that they will not pull out. Every farm should contain a pasture for pigs, set apart for their exclusive use. It should be large enough to afford them ample space, so that while they are feeding off one portion the grass will grow on the rest of it, to afford continuous feed. The size of the pasture must be regulated by the number of pigs to be kept. An acre is sufficient for three or four hogs, especially if the ground has been seeded with Orchard-grass, which starts the quickest and furnishes more feed than most other grasses. The manure from the hogs will increase the growth. The fences should be of a substantial character, so that the pigs will not break out. An unruly hog is the hardest kind of animal to confine, hence the importance of good fences, to prevent them becoming breechy ; a board fence, or a stone wall is the best calculated for this purpose. There is no ground so well adapted for a permanent pig pasture as an orchard, and no grass so well suited to it as Orchard-grass, which grows freely in the shade. In no other way can a crop be obtained so well under the apple-trees; the orchard is kept in a vigorous condition with little labor. I am not sure but the pasturing of hogs in an orchard will keep the trees in a more flourishing condition than tillage. The trees will not be bruised and the roots broken off, as when the ground is cultivated. The fine roots can come nearer the surface, and consequently feed on the richer soil than when the ground is plowed, as they are then torn away and destroyed. Tillage is not necessary for the vigorous growth of trees, nor is it essential for bountiful yields of fruit. But for an abundant fruit harvest richness of soil is of far more consequence.

Pigs solve the off-year problem the best of any plan I know of, by making the land so rich that a crop of fruit may be had every year. I have a small apple orchard which has not failed in an annual yield for years. During this period it has been used exclusively as a pig pasture. No manure has been put on it other than that made by the pigs. My faith in this remedy for off-years is so strong, that another apple orchard, embracing about five acres has been prepared for a permanent pig pasture. The pigs will undoubtedly improve the quality of the fruit by devouring all of the apples which fall prematurely, thus destroying the worms that would injure the apples. There is no mode of treatment which will cause breeding sows to be so healthy and to bear better pigs than when allowed to feed on grass. They are not delirious or ferocious when they have their young, as frequently occurs when confined in a pen. The losses which farmers often suffer on this account, would equal the cost of preparing a permanent pig pasture. When pigs are kept confined and fed entirely on grain, their profit is often a doubtful question. But fed on grass their growth can be made so cheaply that there is no question about profit in hog raising. Under the system stated above, pigs are made valuable aids on the farm in producing other beneficial results.

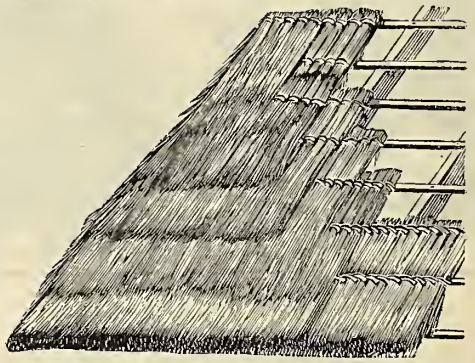
The Value of Ashes.—Coal-ashes do not contain much plant-food, and their value is mostly mechanical. Wood-ashes are rich in potash, one of the three substances the most frequently lacking in poor soils. This potash is very soluble, so that fresh ashes is a quick-acting fertilizer. Leached ashes has the larger part of the potash removed, and they are of much less value The following figures express the percentage of valuable ingredients in unleached and leached ashes :

	Potash.	*Lime.*	*Phosphoric Acid.*
Unleached	7 to 10 %	32 %	2 %
Leached	1 to 2 %	25 %	1¼ %

It will be seen that the loss of 6 to 8 lbs. of potash per hundred is the leading difference between the unleached and leached ashes.

Making Straw Roofs.

For twenty years I have been making roofs of temporary shelters with rye-straw. The straw should be cut when fully ripe, kept straight, and threshed clean by hand with a flail. All the grain must be removed from the straw, or rats and turkeys will make sad havoc with the roof. I do not make the building more than 20 feet wide. Any kind of soft-wood poles will do for rafters, as small crooks will not show in the roof. Make the pitch very steep, at least half-pitch, or the ridge-pole 10 feet higher than the plates of a 20-foot building. The rafters may be cut to project 1 foot, or if poles are used for rafters, small poles, say 2 inches in diameter, may be cut $2^1/_2$ feet long, flattened at the upper end, and nailed to the rafter resting on the plate, thus making the desired projection. Nail a good solid small pole, say $1^1/_2$ inch in diameter, on the end of the rafters, all around the building, splicing when necessary, then use inch poles for sheathing, nailing them on about 9 inches apart. The roof should be hipped at the ends, as it saves gables and looks better. Commence the roof with a loose bunch of straw ; compact it in the hands. Let the butts project about 3 inches over the outside, and tie it to the outside pole and to the one next above. This front row must be doubly secured, to prevent the wind from lifting it. Lay on another row of bunches, letting the butts come down even with the first, but securing with but one tie to the third row of poles. Put on the third row of bunches, letting the butts come about 9 inches up on the two front rows, and proceed shingle fashion until the roof is completed. Finish the roof



ROOF SHOWING THATCHING.

by binding a good supply of straw across the comb, running one or more wires along on each side, and sewing through with wire. For this one will need an assistant on the underside to return the wires through the straw. The corners, also, would be better secured with a little wire. Trim off the eaves with a knife. I have always used willow ties to fasten on the straw, but one can use twine or the kind of wire used by the binders. An expert hand may make a good roof and tie it with straw. I have a shed made in this way 30 by 20 feet, used for storing machinery, the whole cost of which was fifty cents for nails, and four days' work for two persons ; the posts, poles, straw, and ties, were home products. A roof thus made and not disturbed by stock, rats, or poultry, will last twelve or fifteen years. But if used for stock, it must be put up high enough, so no animal can reach the eaves on a cold winter night. If for storage, and away from stock, the sides may be closed up the same as the roof, only not so thick. KENTUCK.

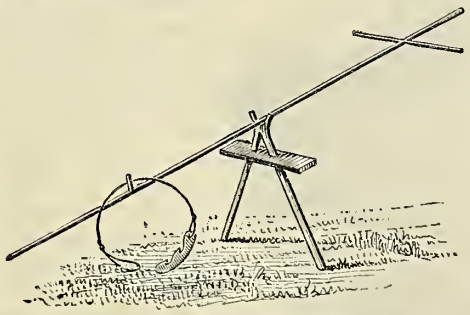
Broom-Corn Cutting—Unprofitable Broom Making.

A correspondent who prefers to be known as "Kentuck," Harrison Co., Ky., gives incidentally to his method of cutting Broom Corn, an account of his unsuccessful attempt to help others, essentially as follows: "A few years ago, we raised considerable Broom Corn, mainly for the purpose of giving employment to an extra hand or two in winter, in making up the corn into brooms. Having a good work-room, we thought we could have the corn made up into plain serviceable brooms, by some poor men of the neighborhood, and sell them at a profit to them, and us also. But in the matter of having them made up at a profit for either party, we were mistaken. In the dark short days of winter, notwithstanding a light and fire were furnished gratuitously, they would work from 9.30 A. M., to 3.30 P. M., taking a hour and a half at noon, making four and a half hours at work, when they should have made ten. The result is, our Broom-corn is now stored in the barn loft, where it has been for five or six years. But we made a discovery in the mode of cutting the crop, which I think has never been given to the public. It is simple, but will very materially lessen the labor of cutting, if any one will give it a thorough trial. The plan is to get astradle of the row, and back down over it, cutting the canes as they come out in front of you, with a pocket knife, gathering the corn with the left hand, and throwing it into piles as cut. Three or more rows can be thrown together in piles on the ground, and gathered by the haulers. No 'tabling,' or previous preparation is required; just put on your apron on the *other side*, and back into it, and you will find the brush just where you want it. The owner of the field will soon find that half the usual number of cutters will keep his stripper busy."

The Clover Plant is a close and deep feeder, sending its fine roots far down into the soil, filling the sub-soil with a net-work of rootlets. It exposes a large leaf surface, and is thus able to concentrate weak solutions of plant food, and prepare them for the formation of vegetable substance. The clover plant grows throughout the whole season, and is thus able to take up the nitrates as they form. These compounds of nitrogen are produced in large quantities in hot summer months, and, being very soluble, would be washed out by the rains, were it not that the clover plant absorbs them. This is one great advantage which clover has over all the common grains, that finish their growth, and are harvested before the time for the most rapid nitrification arrives. It is a well-known fact that clover prepares land for the production of large crops, and this is explained in large part by the long season of its growth, and its deep and close feeding, and the storing up of compounds of nitrogen. The clover plant is largely below ground, so that removing the tops takes away only a part of the vegetable matter that has been accumulated. The roots of clover are large and numerous; when they are turned over in plowing, and decay, they yield a good supply of plant food to such crops as feed near the surface, and must grow rapidly for only a few weeks. In this way the clover crop will help the succeeding wheat crop, and has given rise to the saying, that: 'clover seed is the best manure a farmer can use." If the whole crop of clover is turned under, as a green manure, a much larger amount of plant food is put into the soil. This is one of the quickest, cheapest, and best methods of increasing the fertility of a piece of land.

A Corn-Shocking "Horse."

Mr. John Stewart, Oswego Co., N. Y., writes us: "It is about two years since there



A SHOCKING "HORSE" FOR CORN.

was in the *American Agriculturist*, an illustration of a method for securing corn-fodder with wire bands. This method I at once adopted, and for which I have often been thankful. I send a sketch of my method of fastening these bands, which I have used with entire satisfaction. The fastening is made of hard-wood, the size of ordinary lath, and about five inches long, with two or three notches, thus adapting it to different sized shocks. I send, also, a sketch of an improved "Horse," the step acts as a brace for the legs, and to stand upon when corn is very tall, so as to enable the person to secure the band near the top of the shock. A pin is shown in the "Horse," to hang a few bands upon. With these appliances one is ready to shock the corn. The "Horse" and the fastenings, are shown in the above engraving.

Folding Poultry Shipping Crate.

BY GRUNDY, MORRISONVILLE, ILL.

On farms, where chickens have full run of the yards, they pick up a great deal of food which would otherwise be wasted, and the cost of raising a limited number is comparatively small; but where they must be fed

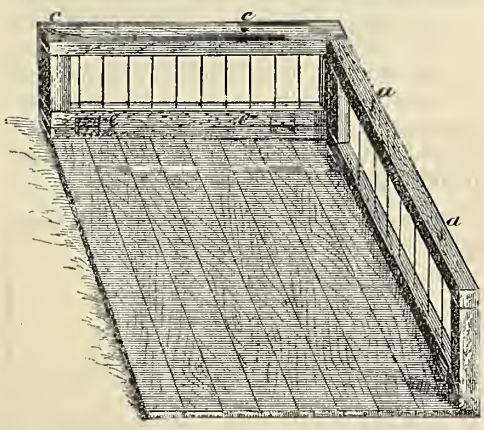


Fig. 1.—THE CRATE, SHOWING TWO SIDES.

grain, the profits are reduced to a fraction, and a very small fraction if they are sold to the store-keeper for "trade." One of the chief reasons why more farmers do not ship their own poultry is the lack of suitable shipping crates. Express companies charge for *weight*, and unless the crates are light and well made, they object to returning them free. Poultry sells better in crates which are light, handsome, and airy.

I send you a sketch of a crate which I invented, and feel warranted in saying that any man who uses it for shipping his poultry once will discard all others. The crate is exactly square. Figure 1 shows two sides and the bottom, or floor, as they are made and attached together. Figure 2 shows the crate empty and folded, also the top, or cover, with its trap door. The entire frame-work is of any tough wood—ash is best—one and a half to two inches square, according to size of crate. The bottom is half-inch pine. The wire I use is common fence wire. The sides figure 1, are hinged to the bottom, or floor, and when folded lie flat on the bottom. On the top of the side, two pins, *a*, *a*, iron or wood, fit into holes in frame of the cover. The sides are hinged to a piece, which is securely fastened to the bottom, and when folded lies on the side. Through the top of the sides are two three-sixteenth-inch holes, *c*, *c*, into which bolts of the same size are passed and through holes *s*, *s*, in the cover

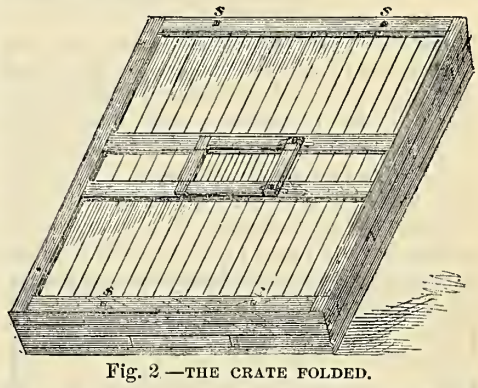


Fig. 2.—THE CRATE FOLDED.

and hold it down. When the crate is folded these bolts are withdrawn from the holes *c*, *c*, and passed through the holes *e*, *e*, in bottom piece of the same side, and then through holes in cover, and hold the whole crate solid and flat for shipping. Thumb-nuts should be put on these bolts, requiring no wrench.

The crate can be made any size desired. A crate holding three to five dozen chickens is usually large enough. In shipping long distances care should be taken to not crowd the birds. Give plenty of room and it will pay in the end. Where the distance is short, ten or fifteen hours' travel, they will not hurt in this crate if crowded considerably, as they cannot become heated.

When well made of good, seasoned wood, this crate will stand a large number of trips. It should be well washed after each shipment. The wood should be well oiled but not painted. If thought desirable, the wires on the cover may be braced in one or two places with binding wire. Fasten one end to the frame, wrap it twice around each wire and fasten to opposite side of frame.

The Fairs are Schools.—The information which a farmer can gain at an Agricultural Fair is of great value to him. He can there study and compare the different breeds of live-stock, and note the improvements that have been made in farm implements, grains, fruits, etc. It also does farmers much good to meet each other, and talk over their successes and failures.

A Medium Sized Barn.

Mr. Edward Pratt, Jackson Co., Mich., sends us plans and elevation of a barn which he thinks is well arranged for the convenience of the general farm of 100 to 200 acres. He writes: "The plans show the general arrangement; the section of frame gives the disposition of middle bents with a clear opening for the use of hay fork and carrier. The basement is 9 ft. in clear; hight main building posts, 20 feet. The basement timber is oak, the rest and covering is of pine. The cost is about $1,500. The barn fronts the east, with basement wall extending along the west side and across the north end. I find in building

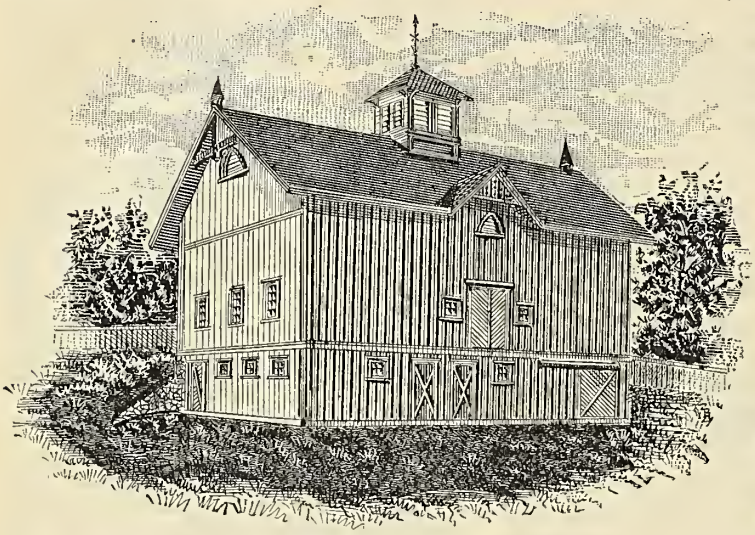


Fig. 1.—REAR PERSPECTIVE VIEW OF THE BARN.

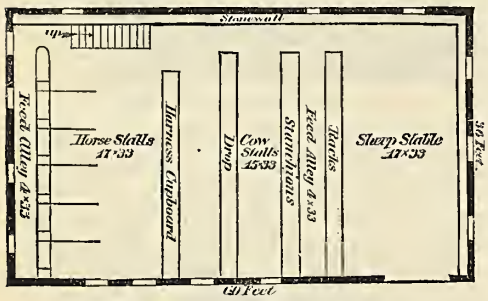


Fig. 2.—PLAN OF THE BASEMENT.

that there are a great many little conveniences that can be worked into a barn of this kind that are difficult to describe, but add much to handiness and ease of doing work."

Economic Feeding in Winter.

BY PROF. J. W. SANBORN, AGRICULTURAL COLLEGE, HANOVER, N. H.

That kindness can be coined into cash in stock management, and that good sanitary conditions can boast of the "penny saved," are admitted, but these are factors not in themselves, or in their products weighable, and we pass them, and similar conditions, for a brief notice of a few essential points relating to animal growth, and the increase of some of its products, the value of the observance of which, we can measure by that impressive standard, the dollar.

Animal-heat is one product of the materials taken into the system by the animals. Excluding high or summer temperatures, the colder the day, or the lower the temperature surrounding the animal, the larger the share of the food consumed, that goes to maintain its necessary heat. The amount of food required to maintain normal animal temperature, is modified in practice by at least three common methods. The more important of these I will name here:

Warm stables, or those within which the temperature can be easily maintained higher than that outside, by preventing too free a circulation of the air. How to make such a stable, is a question which I do not propose to answer, but to consider the comparative value of such stables. I may add that our College Farm barn has upon close-laid boards, a layer of heavy paper, covered by clapboards. The stalls are ceiled up in a section of the barn, forming quarters where water will not freeze in winter. Leaving out some fine questions in physics, about heat-units, etc., let us enquire whether well constructed stalls will *pay*. All admit that in cold weather more food is eaten, but in practice, most say that hay is cheaper than boards. Western men often openly maintain it. We must know what degrees of temperature mean, in pounds of hay or milk. Very many prolonged trials have shown me that the milk flow of cows fluctuates with the temperature, and in a marked degree when the inside temperature, as in an ordinary barn, follows closely the outside changes. The amount of the change of milk flow depends upon the length of time and intensity of the change of atmospheric temperature. A change of temperature of 1° for 10 days, will be clearly noticed in milk product, or 10° for one or two days, will have unmistakable effect on the amount of milk. I have collected a considerable material, yet probably not enough for an exact statement, but the indications seem to be that a change of 5° to 10° for a prolonged period, say a month, in temperature, is followed by nearly the same per cent in change of milk flow. Thus, everything else being equal, I should expect that a stable averaging 32° would show a milk flow on the same consumption of food of about 10 per cent more than would be the milk flow in one of an average temperature of 22°. Supposing each cow of the lot in the warmer stable, to give 10 qts. of milk per day, then each of the other lot

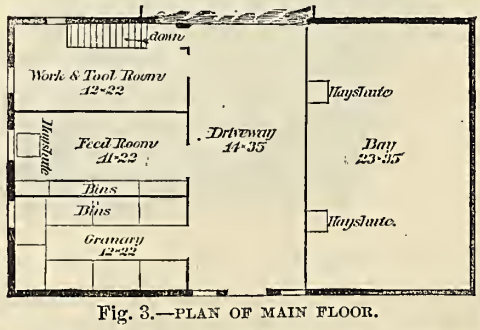


Fig. 3.—PLAN OF MAIN FLOOR.

would give but about 9 qts. A quart of milk per day, for 100 of our colder days, at $2^1/_2$ cts per qt., would give a saving of $2.50 per cow. A somewhat similar result I arrived at by a different method. I ceiled up stalls for 15 cows at a cost of $30. I ascertained how much milk cows in these stables were giving each. Then two were put upon the other side of the barn for a month, and at the close of a month, the two lots of cows were exchanged, and the milk flow noted. The hay eaten was daily weighed for each lot; the weight of the cows noted, and the amount of butter from a given quantity of milk taken. The quality of the milk, so far as butter was concerned, and the weight of the cows were not seemingly affected by the temperature, the changes noted being in the amount of food eaten, and in the amount of milk flow. The food saved by the warmer stalls, was 8 lbs. stover, and 9 lbs. hay per cow, per day, and the increase of milk flow, 2.8 per cent. With hay at $16 per ton, stover at $8, and a cow giving 10 qts. milk per day, worth $2^1/_2$ cts. per qt., we have a total in favor of the warmer stalls, of 11 cents per cow per day. These facts were carefully taken over a

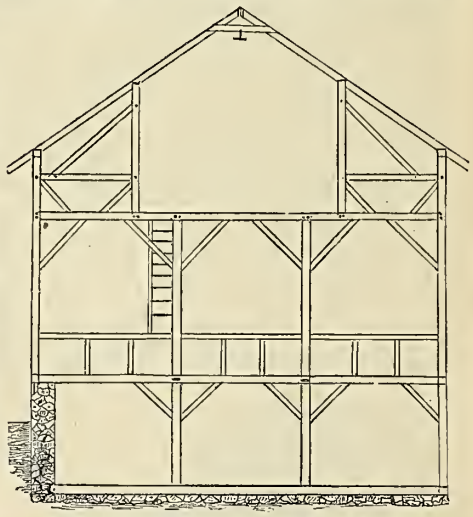


Fig. 4.—SECTION OF FRAME OF BARN.

period of nearly 3 months, and in their results show that I nearly got the cost of improving the stable for the first winter, or about 100 per cent interest for four months. The difference in temperature of the ceiled stalls, and those of the open barn, was from 10° to 12°. I will give an illustration of the effect of change of temperature, on a lot in stalls not closed from the open barn. Jan. 18 to 28—yield 880 lbs. milk, temperature 1° below the freezing point. Jan. 29 to Feb. 7—yield 800 lbs., temperature 10° below freezing point, loss, 10 per cent. Many a farmer whose money is out at low rate of interest, on doubtful security, will find it profitable to invest in better stalls. How warm shall we attempt to maintain our stables? My impression is, that it will not be desirable to gain an average temperature above 45 to 50° in cold weather, unless by artificial sources of heat, a higher temperature is gained by sacrifice of essential ventilation. I thought that in the trials, 45° gave me as good a result as a higher temperature. Others say that 60° is the most desirable.

Advantages of a Rotation of Crops.—Different crops require food elements in different proportions; thus clover and roots need more potash and nitrogen than the grains. A rotation enables one kind of plant to work for another. Thus clover, a deep feeder, brings a large amount of plant-

food up from the subsoil, which wheat or oats can use to advantage during their short period of growth. A variety of crops permits the farmer to cultivate the soil and keep it clean of weeds, and deep and mellow. A good, five-year rotation is wheat, clover (two years), corn followed by oats.

Rearing Pure-Bred Fowls.

BY D. Z. EVANS, JR.

During the prevalence of the so-called "Hen Fever," fabulous prices were paid for very poor specimens of fowls. Until breeders of poultry called a meeting, and devised and formally adopted the "standard of excellence" for poultry, each breeder carried out his own views in regard to shape, size, markings, and name, and confusion reigned supreme. Method, knowledge, and experience now rule, and it is owing to the "standard" that we now have such a uniformity in the aims and results of breeders of pure-bred poultry.

There are very many business men in the cities who live in suburban places, or in towns near by, who could raise fine pure-bred poultry for the pleasure and recreation it affords. It diverts the mind from the heavy strain of business, affords a profitable way of employing the leisure hours, and often adds greatly to the attractiveness of the home. The expense of keeping a flock of pure-bred fowls, of from ten to a dozen breeding birds, is not much of an item, especially when so much that would otherwise go to waste from kitchen and table can be utilized as poultry food. Even where all the food has to be purchased regularly for the fowls, and such cases are very rare, the eggs and young chicks will far more than pay for it, leaving a snug little surplus with which to purchase new breeding stock from time to time, as may be required. Good breeding birds, of almost any of the pure-bred varieties now so generally bred, can be bought at from $1.50 to $5 each, according to age, sex, and quality, though it is always economy to start with a flock, however small, of *extra fine* birds, as the progeny will be more satisfactory, and if offered for sale for breeding purposes, will sell at satisfactory figures. Ten per cent of extra fine chicks is about as many as can reasonably be counted on each season, some few of the remaining birds being fair birds for ordinary breeding, and the remainder excellent for the table or market. To prove conclusively that the birds have paid well for the care and food bestowed, keep a regular debit and credit account, and it will surprise a novice with what a small flock is capable of doing when properly cared for.

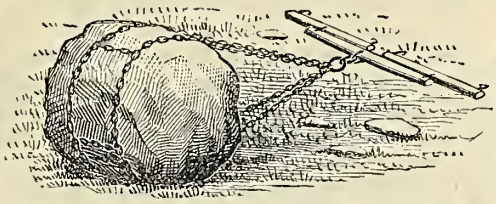
As most persons living in country towns or in the suburbs of the large cities have but a limited amount of ground, fowls must put up with but little exercise room, as a rule; and while the Brahmas and Cochins, and perhaps the Plymouth Rocks, may do well in small enclosures, under the care of a painstaking person, all fowls should have the largest possible space to roam in. Where the birds are necessarily kept in a small yard, everything should be done to make up for the loss of room and absence of a grass run, by supplying scratching material, fresh, short grass, or other green food daily, winter and summer, and by strictly adhering to cleanliness in every particular. Close confinement invites and engenders disease or disorders—lice, mites, and other parasites, which so annoy and destroy the birds. The houses, nests, etc., must have especial and frequent attention, and everything kept neat and clean. This is conducive to healthfulness, and gives the place an air of neatness.

The choice of breeds is a matter of much annoyance to the novice, who, not having any experience, is guided generally by mere chance in the selection, and not by any system of reasoning. Where mere beauty is the consideration, then some breed which is noted for that quality should be obtained, as the Polish, especially the White-crested Black variety. Where eggs are the desideratum, the White or Brown Leghorns will give satisfaction, the latter breed being very handsome in plumage when properly bred. For heavy weights, where plenty of flesh is wanted, the well-known light Brahma, or, in fact, any of the Asiatics (Brahmas and Cochins,) are the ones to choose. Where proud-bearing, and quick, active birds are wanted, the several varieties of the Games should be considered in detail, the Black-breasted Red Games being universal favorites. Where something neat, pretty, and small is desired, the Bantams "fill the bill" exactly, the preference being about equally divided on the Black-breasted Red Game Bantams, and the Silver and the Golden variety of Sebrights.

A Non-Slipping Chain for Boulders.

BY L. D. SNOOK, YATES CO., N. Y.

One great trouble in hauling boulders or large stones with team and chain is the liability of the chain to slip off, especially if the stone is nearly round. By the use of the contrivance shown in the engraving, nearly all of this trouble is avoided. It consists in passing two log chains around the stone and connecting them a few inches above the ground by a short chain or even a piece of rope or wire. Connect the chains in a similar manner near the top of the stone. The ends of the draught chains are attached to the whiffletrees in any way desired. In hauling



METHOD OF FASTENING CHAINS ON A BOULDER.

down an incline, or where the ground is very rough, it will be best to wrap each chain clear around the stone, connecting with whiffletrees by a single chain, thereby preventing a possibility of the chains becoming detached or misplaced in any way.

A Pitchfork Holder.

J. E. H., Emporia, Kansas, writes us: "Having occasion to go into the barn one night, I received a very bad wound from a pitchfork which had fallen from its standing position. This led me to construct a Holder, a sketch of which is here sent. The fork-holder is made of an inch board, of a semi-circular shape, with five holes large enough to admit a fork handle, bored near the curved side. This board is nailed to a standing post in the barn. A strap or curved bolt is placed some distance below to hold the handles in place

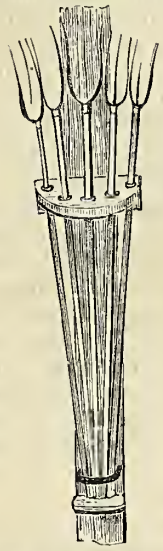


Fig. 1.—FRONT VIEW.

Fig. 2.—SIDE VIEW.

as they rest on a bottom board fixed for the purpose."—Figure 1 shows the front view of the holder; figure 2 gives the side view.

Muck.—What is Muck?

In England, muck means manure. In "Pilgrim's Progress," "the man with the muck-rake" was searching for good in the gutter's filth; but not finding that for which he searched. "Muck is money," is an English farmer's proverb, the meaning of which is clear enough. When agricultural writers in America talk about *muck*, they mean swamp muck, and by this, a substance of a peaty character, rich in humus, of a dark brown or nearly black color, consisting of the remains of plants which have undergone partial decomposition under the constant influence of water. This has no constant composition or appearance other than indicated. In peat-beds, the true peat is often several feet deep, and there may be a good deal of similar material which is crumbly, more or less mixed with earth or sand, and unfit for fuel. Other deposits abound in which there is no peat fit to use as fuel, but with an abundance of other material useful to farmers, and properly enough called muck. This is black soil, at least half of which will burn away when dry. It often dries hard, like clay or bricks. It crumbles under the influence of frost and air, and often simply by drying. This substance, including all varieties of peat, is or may be made useful in every upland soil, indeed in every soil not of a peaty nature to begin with. It is often rich in nitrogen, the most costly ingredient of fertilizers, often contains phosphate of lime and other valuable ash-ingredients. By its decomposition in the soil, its absorbent action, its promotion of other decompositions and changes in the soil, its presence is always beneficial. Under some peculiar circumstances, these effects are hindered, probably by the presence of organic acids in the peat. To such peats and mucks the term "sour" is fitly applied by farmers. They may, however, be neutralized, or, so to speak, sweetened by lime. Fresh-burnt lime rapidly absorbs water, and falls into a fine dry powder. The muck is spread in layers, a few inches in thickness, and lime in this form is spread thinly over it. It is not necessary to be ac-

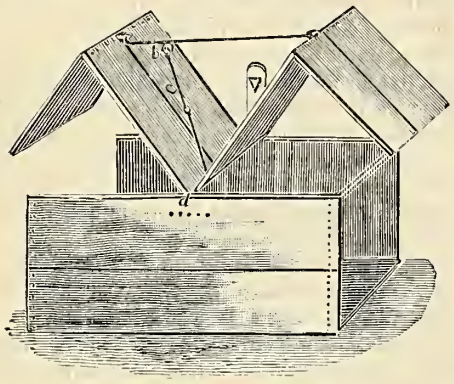
curate in regard to proportions, but best to be uniform. If the muck layer be about 4 or 5 inches thick, half a bushel of lime will be sufficient for a space of 10 feet by 10, or 100 square feet, and may even be used for double that area. The muck being piled up in layers, each receiving its quota of lime, becomes changed—more easily pulverized and disintegrated, equally useful as an absorbent, and a superior ingredient of composts.

The muck or peat of some localities may be applied directly to the land, either fresh dug, if dry enough to haul, in which condition it is best to apply it in the autumn, so that it may become ameliorated by the frosts and thawings of winter, or after such weathering. Other kinds of muck cannot be used advantageously without composting with lime or manure, or with ashes, or some other active substance, while that of some localities, applied raw, is positively deleterious to the crops of the first year.

As a general rule, muck may be made most useful in ordinary farm operations by mixing it with manure from the stable, in the cow-yard, the pig-pens, or the sheep-yards, and it is safe to say that the addition of muck of good quality in this way may easily double or triple the value of the manure made upon the farm. That is, a yard capable of furnishing, under ordinary circumstances, 100 loads of manure, may be made to furnish twice or even three times as much, both in quantity and value.

A Box-Trap for Rats.

Mr. W. H. McDonough, Allegheny Co., Pa., describes his box rat-trap, and from the



A TRAP FOR RATS.

sketch sent us, the accompanying engravings are made. The trap consists of a box $2^2/_3$ feet long, 10 inches deep, with the end and top pieces made to fit, and fastened to the box at the middle point, *d*. These ends are raised to within six inches of each other, and are held there by a hook as shown in figure 1. The hook is made of heavy wire, fastened to one "lid," and hooking into a staple in the other. From this hook, a wire runs down through a hole, into the center of the box. Figure 2 shows the form of the trigger. So soon as a rat feeds upon the bait, the ends of the trap fall, and the vermin is caught. The rat can be killed by drowning or in some other way.

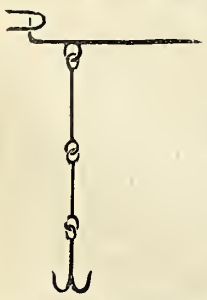


Fig. 2.—THE TRIGGER.

Ensilage and Silos.

J. P. ROBERTS, PROFESSOR OF AGRICULTURE, CORNELL UNIVERSITY.

During the past year, I have had some experience in building Silos, and in cutting and feeding Ensilage, and perhaps it may be of some value to those who intend to adopt this new method of preserving fodder. As I have formerly stated, the Silo should be long and narrow, with the long side next to the barn. If the extreme inside length were 32 feet, and the width 16 feet, there should be three cross divisions in it; this gives four compartments, 8 by 16 feet each. If the extreme depth of the Silo is 20 feet, it can be filled up 15 feet, and will settle to about 11, nearly all the settling occurring within forty eight hours. Nearly all the upper half of the Silo is for temporary use, and therefore may be constructed of rough unmatched boards. There will be wanted at most, only 12 feet of air-tight stone, or wooden wall.

Last year, I raised and ensilaged about three acres of Southern White Corn. The drouth cut it short, and there proved to be scarcely 50 tons of it. It was fed to fattening steers, milch cows, and three-fourths blood Holstein heifers, coming two years old in June and July. The three heifers selected, were an average of six that had been running in an open basement, and had been fed on hay alone. They were put into stanchions on a plank floor (for the first time,) and about two weeks afterwards, the experiment began. Each was fed daily, 50 pounds of Ensilage, and one half pound of Malt-sprouts. The weights at various times, were as follows:

	No. 1.	*No.* 2.	*No.* 3.
Feb. 24	770 pounds	650 pounds	780 pounds
Mar. 3	832 "	850 "	834 "
" 10	830 "	890 "	850 "
" 17	840 "	900 "	820 "
" 24	824 "	882 "	824 "

March 31st, 2 pounds of Cotton-seed Meal were added to each ration:

Apr. 7	890 pounds	850 pounds	840 pounds
" 14	872 "	938 "	862 "
" 22	870 "	925 "	902 "
May 1	916 "	960 "	926 "

If the weight of March 3d be taken as the most correct, it is evident that there was no such true gain, as the figures between Feb. 24th, and that date indicate, but rather an increase of the contents of the stomach, due to more palatable food—then, the increase shown is but 14 pounds for the three animals in 21 days. It is evident that this ration was very close to a maintenance one, as it was meant to be. The analysis of the Ensilage, as well as all the other foods experimented with during the last year, has now been made. The gain in the last 23 days, when the two pounds of Cotton-seed meal were added, was 222 lbs., while in the interim of 14 days, from Mar. 24, to Apr. 7, the gain was 50 pounds. Without doubt, this last gain was largely made during the first seven days of April, when the meal was fed. From the above, may not the following conclusions be drawn? That Southern Ensilaged corn will maintain young animals, but that it is better economy to add to it some food rich in albuminoids. The heifers, fed as above, came through the winter looking far better than the three of the same age fed on hay, and have done much better this spring since they went to pasture.

In February we had two aged cows go dry, and one heifer; they were then low in flesh, having been milked over a year. With feeding stuffs, ranging from $35.00, to $40.00 per ton, they could not be sold at an average of more than $25.00. I determined to feed them. They weighed as follows:

	Heifer.	*No.* 1.	*No.* 2.
Feb. 21	1150 pounds	1000 pounds	980 pounds
Apr. 20	1320 "	1150 "	1070 "
Selling price	$65.74	$50.00	$49.97

They were fed 52 pounds of Ensilage, and 8 quarts of Corn-meal each, per day, until April 5th, when two quarts of Cotton-seed Meal were substituted for two quarts of Corn-meal. The best results in feeding for milk was, when Ensilage was fed in connection with about 2 pounds Corn-meal, 2 pounds Bran, and 3 pounds Cotton-seed Meal,

The experiments with the steers are too lengthy for insertion here, and I pass to what I have been doing more recently.

On the 16th and 17th of June, I put into one of our Silos (11 by 16, and 28 feet deep,) three acres of Rye, and 1½ acre of Clover; one load of Clover was sandwiched between two loads of Rye. The fuel was 1½ cord of 2 foot wood; the engineer a 16-year old student; one man in the Silo the first day, two the second; seven men and two teams to cut, haul, and feed the material. The Rye averaged fully $6^1/_2$ feet in hight, and grew on the ground where the Ensilage Corn grew last year, which is already again planted to Ensilage corn. The Clover was heavy, and together they filled 22 feet of the Silo. It settled six feet in forty-eight hours, and appears to be about done. This, at 45 pounds to the cubic foot, gives 63 tons. The pressure is secured by about three tons of stone piled at the corners, and a screw, anchored in the bottom of the silo, made of two sections of $1^1/_4$-inch square iron; the third section, round, four feet of it having threads cut, five to the inch. Two 8-inch timbers are laid lengthwise about four feet apart; short blocks upon these form a sure foundation for the circular, cast-iron cap, upon which the nut turns. Notwithstanding all that has been said against the rod pressure, I like it. The Silo was covered, weighted, and screwed down within a half hour from the time the cutter stopped, and less than two hours labor of one man has been spent since, in turning down the screw; ten minutes will unseal it.

The reader, who is balancing the pros and cons of Ensilage in his mind, is without doubt still undecided, but I think I have given data, from which a better understanding may be reached. It is utterly impossible for anyone to make others' circumstances similar to his own, but it may not be unprofitable to enumerate the various items of cost, etc. First, we have a stationary engine for threshing—a horse power may be used. The Silos of 150 tons capacity together, cost about $300. The cutter cost $100, but we need one for other use. Two of the men employed, cost $1 per day; seven men $1.25 per day, and one man, $1.75 per day. The teams are worth very little to us about that time of year, and their labor is light. There is a little charge to be made for the use of tools and implements. The three acres of Rye had a dressing of 15 loads of farm manure, worth to us, $15. Perhaps half of this should be charged to the succeeding Corn crop.

What it will cost A or B to raise three

acres of Rye, I cannot say, nor what 1½ acre of Clover is worth; the second growth will probably be heavier than the first. From September until next June, I shall have ready sale for about 5,000 quarts of milk per month, at five cents per quart. If the drouth comes, it is difficult to produce it, for the more cows one purchases, the more the evil is aggravated; but with Ensilage, cows can be kept from flies, out of the sun, fed in the stables, and turned out at night.

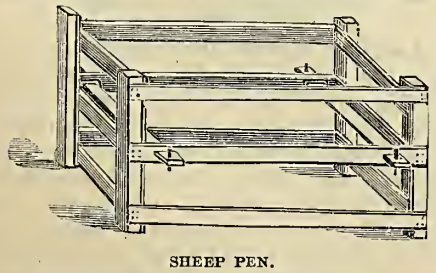
I believe the greatest utility of Silos will be found to consist in the means they furnish of preserving forage plants, in a green and palatable state, which may be easily grown in abundance in May and June, but if not then secured, they would become dried up and nearly worthless, or, if dried and housed, the animals appear to have but little relish for them in the hot, dry days of August. The reasons for building Silos with small compartments are manifold: a small compartment may be filled and sealed up in a single day, thereby not seriously interfering with the regular work. Each forage plant may be taken when in its best condition. One compartment may be filled early with Rye and Clover, which is showing a tendency to spoil by lodging, or is full of weeds that it is desirable to eradicate: a second with Oats and a second cutting of the former Clover field, or a weedy, belated piece of Timothy. A piece of fodder corn and aftermath would fill a third compartment later in the season.

If the compartments are small, they may be uncovered entirely and fed from the top, and if not all consumed, they can be filled up with new material; or, if one or more compartments are entirely emptied, they may be refilled in September, thus securing a two-fold benefit from them. From my experience, I judge that a compartment not entirely emptied in the spring, if disturbed only on the top, would sustain little loss until June if re-sealed, or it might be left open, and daily a little of that exposed to the air, fed to the horses as cut feed. Our horses, thus fed last winter, relished it very much.

There are many problems in regard to Ensilage, that are still unsolved; but should everything be found favorable to the new method, there are still men who would have no more use for a Silo, than for a trotting-horse. There are men having so little energy and skill, that should you give them the best herd of Shorthorns, they would have little better than scrubs in ten years. Under certain conditions, the new method, I believe, can be adopted with profitable results; but he who rushes thoughtlessly into it, will find, I fear, that Ensilage is too "Frenchy," unless mixed with a liberal allowance of brains.

A Pen for a Sheep.

Mr. C. V. Prince, Bradford Co., Pa., has a

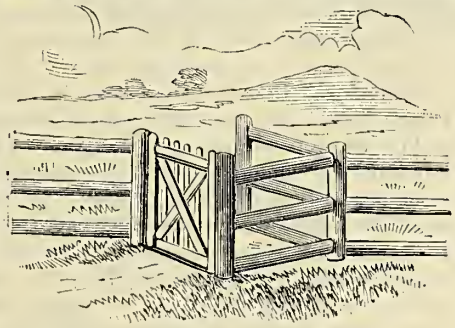


SHEEP PEN.

convenient pen for sheep and young lambs that require extra care; those that will not own their lambs, etc. It may be put on the barn floor or in any other desired place, and when not in use, can be laid away in a compact manner. Take three boards, 6 feet long and 6 inches wide, for the sides of the pen; nail these on an upright piece 3 feet long, 6 inches apart, letting the piece run down 6 inches below the bottom board. Make the ends in the same manner, only have the boards 4 feet long. Cut a mortise 3 inches long by 1 inch wide, 8 inches from each end of the middle side board. Set the ends of the pen *inside* of the upright piece of the sides; cut slats that will fill mortises, and pass them through the inside ends of the pen. Put pins on the outside of the sides, to hold together, and a convenient place to keep sheep is made.

A Gate for a Foot-Path.

Mr. Wm. Lester, Rockingham Co., N. H., sends us a sketch and description of a gate. He writes: "This gate is common in England, where it is much used in foot-paths



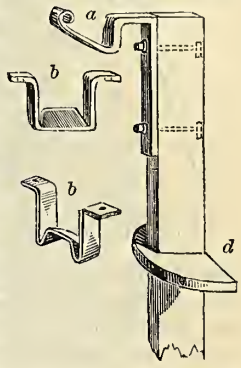
A GATE FOR FOOT-PATH.

across fields, etc. Where careless people might otherwise leave openings for stock to get into cultivated fields, or stray away; I have three of these gates on my place, and no animal has ever found its way through them. It is an ordinary small gate, which swings between two posts, set far enough apart to permit the passage of a person. These two posts are the two ends of a **V**-shaped end in the fence."—The engraving shows the construction of the end of the fence, with the two posts, between which the gate swings.

The Origin of Blue-Grass.—According to the story of a Plainfield, Ind., paper, now going the rounds of the journals, "the Blue-Grass, now so famous in Kentucky, was first raised in Indiana, at a little burgh called Miami Village, on White River, in Hamilton Co." Some Indians, in 1781, captured two boys, Conner by name, in Western Pennsylvania, and took them to the village aforesaid. In due time the boys became "big Injuns," and it is through John, the Plainfield paper learns, that "Blue-Grass was a native of what is now Hamilton." It was Gen. Harrison's army that took the grass from Hamilton Co., Ind., to Kentucky, where it spread rapidly. The writer of that article, and those who quote it, do not seem to be aware that Blue-Grass (*Poa pratensis,*) is a native of the north-temperate parts of both continents, and so far from being confined to Hamilton Co., Ind., is a native of a great many places, from Pennsylvania, northward. It finds specially favorable conditions in Kentucky, and in that State developes so luxuriantly that the grass was for a time supposed to be peculiar to it, and received the name "Kentucky Blue-Grass." It is now well known that this grass is only the old "June," "Spear," or "Green Meadow-grass." That the grass may have been taken from Indiana to Kentucky is possible, but that this throws any light upon the "Origin of Blue-Grass," is simply nonsense.

Self-acting Barn-Door Fastener.

Mr. C. Terrell, Cuyhoga Co., Ohio, thus describes his barn-door catch: The pole, which must not be too heavy, slides loosely up and down through the cleats, *d*, (only the upper one of which is shown). The catch, *a*, of stiff bar-iron, rises on and hooks over the inclined plane of the staple, *b*, also made of bar-iron, and bolted in the lintel. A hole in the floor receives the lower end of the pole in the usual manner. This is a self-fastening arrangement for swing-doors, and may be applied to each door separately. Put on axle or other grease, to prevent friction, until the parts have become smooth.



PARTS OF DOOR FASTENER.

A Cedar Stem Soil Stirrer.

A convenient and quickly made implement for stirring and mixing manure and fertilizers with the soil, may be made as follows: A cedar stem is cut (one about eight feet long is most satisfactory) and the branches cut off several inches from the stem, leaving long spurs on all sides for its whole length.

A STIRRER MADE OF A CEDAR STEM.

A horse is hitched by a chain to the butt end, and the driver guides the implement by a rope fastened to the rear end of the stem. By means of the guide rope, the implement may be lifted over or around obstacles, and turned at the end of the field. Such an implement is specially useful in mixing fertilizers with the soil, when applied in drills for hoed crops.

A Portable Texas Fence.

Mr. A. Baseke, Montgomery Co., Texas, sends us a sketch of a portable fence of his own

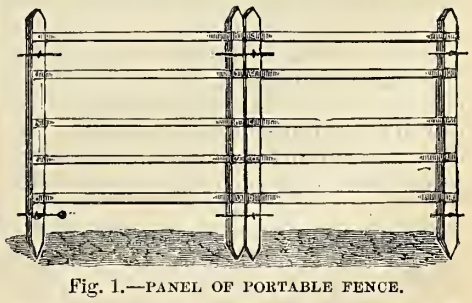


Fig. 1.—PANEL OF PORTABLE FENCE.

construction. The posts are 5⅓ feet long, 2 by 3 inches thick, pointed on both ends. The rails or slats are 8 feet long. He writes: "Lay the posts parallel, 8 feet apart on the ground, and nail the slats on, the upper and

lower 3 inches from the ends, the middle slats as far apart as desired; raise the panel up, and bring it in line. Drive two oak pegs in the two 1-inch holes, which are about 9 inches from each end in the post; these ought to be bored in before the slats are nailed on. Set the posts in the ground down to the lower rail, and then drive the braces firmly in the ground, and nail them with one eight or tenpenny nail to the post. I claim for his fence that one man can put it up or down in a short time; that it will be more firm than a fence with posts; and if the lower end becomes rotten, the post can be put in place upside down."—Figure 1 shows the form of the panels, and an end view of a post with the braces is shown in figure 2.

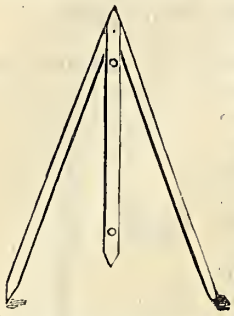


Fig. 2.—END VIEW OF A POST WITH BRACES.

The Uses of the Cellar.

Every one knows the importance of a good cellar in preserving vegetables, but to those who grow flowers it is of equal value in keeping plants not used as food. There are many things which can be kept through the winter, in a state of suspended animation, so to speak, provided they do not actually freeze or become killing dry. "There," said a gentleman whose place is one of the many near Boston, well worth visiting—"there is the most valuable structure of the whole." To go from one part of the grounds to another, on high land, a bridge was needed. Two heavy walls were built of stone; a roof of timbers was made and covered with earth. This gave both a bridge and an above-ground cellar, a spacious one too, in which tender and half hardy plants, so largely used in the decoration of the grounds, were kept during winter. Most persons will, however, content themselves with a house-cellar, and there is more danger usually that it will be too warm, rather than too cold. The temperature should be kept as near 40° as possible. Light, if admitted at all, should be but little, at most a sort of twilight, for we do not wish the plants to grow, but to keep in a state of complete rest. It will not do to utterly neglect the plants thus stored. They will need very little water, but, especially towards spring, must have enough to sustain life. In such a cellar may be kept those shrubs that are just on the verge of hardiness. The variegated Hollies, Cape Jessamines, Oleanders, Pomegranates, and a long list of other evergreen plants; also Fuchsias and other deciduous shrubs that have a complete rest during winter. Geraniums, and other bedding plants, taken up and planted out in boxes of soil, will keep almost as well in the cellar as in a greenhouse. Indeed, a good cellar, well used, is worth more to the average amateur than a greenhouse.

What are Sprouts?—"H. B. D." The plant given in the books and catalogues as Kale and Borecole, is called "Sprouts" by gardeners and market-men in and around New York. This name is probably local, and is given especially to a variety also known as "Dwarf German Greens." It should be sown this month in rows 15 or 18 inches apart. When large enough, thin plants to 6 inches, and keep them clear of weeds. Near New York, covering in winter is not necessary, but in a more severe climate, a light covering of salt-hay or of straw is given. As soon as the ground can be worked in spring, the soil around the plants is loosened by a hoeing. The crop is cut up and marketed early in May. Seedsmen generally have the seeds of the Kale or "Sprouts."

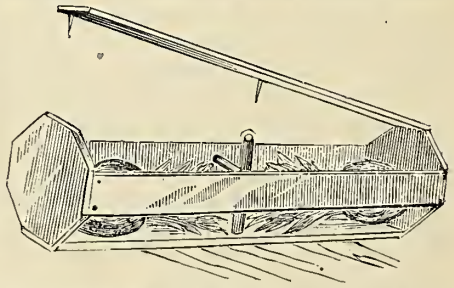
Keeping Apples.—An Experiment.

"W. J. R.," Allegheny Co., Pa., writes us that he has tried the various methods we have given in former years, for keeping apples for winter use, and thinks that the results of none of these will compare with some from his experiments in the fall of 1880, which he gives as follows "for the benefit of the many readers of the *American Agriculturist*":

About the end of October, 1880, I put up seven barrels of apples. Five of them I intended to keep for an experiment and consequently was very careful in packing them. Each apple was examined before putting it into the barrel; two of the barrels were "Rome Beauty," and the other three were of "Fallawater." In one of the barrels of Rome Beauty I put dry oak leaves in the bottom and on the top before heading up. In the other of the same variety I put nothing, using perfectly dry barrels for each. In one barrel of Fallawaters I used dry oak leaves at top and bottom, and also put layers of leaves among the apples all through the barrel. In another barrel of the same kind I used paper instead of leaves, putting in a layer of apples, then covering with a newspaper, and so on alternately, until the barrel was full. In packing the last barrel of Fallawaters, I wrapped each apple in paper, the same as oranges are wrapped, and then packed them loosely in the barrel. In all the barrels I bored holes in top and bottom, for the free admission of air, and then stored them in my cellar, laying them on their sides, being careful to keep them in as cool a place as was safe from frost. In April of the following spring, I opened the two barrels of Rome Beauty, and found the one with the leaves to be in much the best condition, yet not altogether satisfactory. On the first of May I opened the barrel of Fallawaters that was packed with leaves. It was in bad condition, nearly one-half being rotten. On the fifth of May I opened the other two barrels. That which had the paper betweeu the layers of apples was in bad condition, but not so many were decayed as in the barrel with leaves; the last one, with each apple wrapped in paper, was in most excellent condition; there were only twenty specked and rotten apples in the whole barrel, while the color was beautifully preserved and the apples had a delicious flavor. They were fresh and beautiful in appearance, without any dampness or moisture. A gentleman present when the barrel was opened pronounced them the best kept apples he had ever seen. The success seemed to be due to the fact that the paper absorbed all the moisture that was given off the apples, while the holes in the top and bottom allowed the free circulation of air. As to the other barrel, in which paper was spread in layers, this prevented the free passage of air among the fruit, and the dampness was retained in the barrel, thereby causing the apples to decay more rapidly.

Living Plants by Mail.

The Englishman never mails his letters, he always "posts" them. So in sending living plants, he does not forward them by mail, but by post. With plants in a state of rest, there is little difficulty in sending them by mail; all we have to look out for is too great dryness, such as will destroy vitality, and too much heat, which may start them into growth. Those plants with large and fleshy roots or root-stocks, if they have an excess of leaves removed, will remain for a long time in a package without injury, provided they do not dry out. Geraniums and other plants with large and strong stems, carry very well, especially if they have been hardened off somewhat, so that the growing part is not too succulent. But it is sometimes necessary to send living plants which have no fleshy roots, and the stems of which, whether above ground or below ground, in the form of root-stocks, are so slender, that if they once receive a severe check, do not recover. With such plants, the best we can do is to put them as nearly as possible in a state of suspended animation, and in the condition of a plant that has been badly neglected. A neighbor of ours received a few days ago several choice Violets from England, packed in a manner which brought them to hand in as good a condition as could be expected. The roots of the plants were surrounded by damp (not wet) moss, which was inclosed in sheet gutta-percha or water-



proof paper. The plants thus prepared were then fastened in small crates, two in each, like that shown in the engraving. The crate is 9 inches long, and 2¾ inches square at the ends. Two pieces are placed in the middle, to prevent crushing, a precaution hardly necessary. The plants were so tied to the slats of the crate that they could not shake about and be bruised, and the whole covered with strong paper. The plants in such a package have all their wants fairly supplied, except light, and, save that the leaves were much blanched, came to hand in very satisfactory condition. The crates weighed 4¼ ounces, and are needlessly heavy, and we have no doubt some of our ingenious readers will improve upon this method, which is the best we have seen yet for sending living plants across the ocean, or on long journeys by land, in the mail or post.

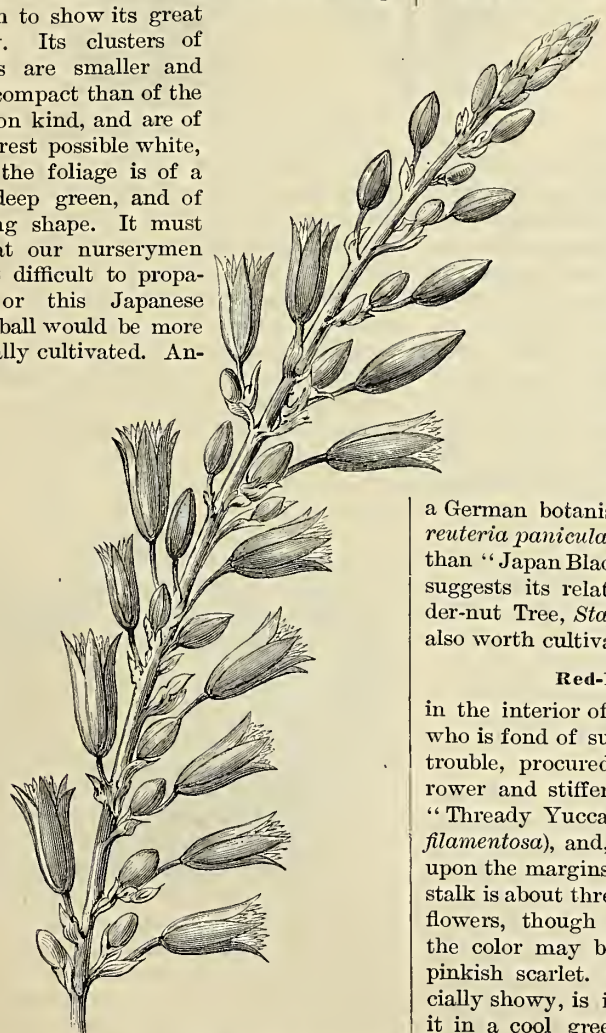
Annual Larkspurs appear to have gone out of fashion. Many years ago beds of them were quite common; in variety of color and somewhat in form, the flower-spikes resemble those of the Hyacinths, while costing very little. The kind known as "Dwarf Rocket" is best, and to have it in perfection, the seeds should be sown in autumn, and the plants must not be transplanted. But few annual plants make such a brilliant show as this, if thus treated.

Notes from the Pines.

A fine shrub takes up no more room than a poor one, and, as a general thing, costs but little more at the start. Did people only know of the existence of many choice shrubs, what a difference would not only the grounds of large places, but the ordinary front yards of our villages present! As it is, the shrubs in one yard are for the most part the counterpart of those in the next yard; the village nurseryman naturally recommending those things of which he has the largest stock, and these will be, of course, of kinds most readily propagated. The number of really fine shrubs is now very large, and one has only to give proper care to the selection to have them in flower from earliest spring until frost comes. Among the shrubs of comparatively recent introduction in this country, I know of none more valuable than

The Japanese Snow-Ball.

The old Snow-Ball (*Viburnum Opulus*) is a pleasing shrub, but it is vastly inferior to the species from Japan (*Viburnum plicatum*), in habit of plant, in foliage, and in flower. I well remember the enthusiasm of an old gardener over the plant when it first came out. Indeed I think that his plant was the first brought to this country. "Look at it," said he; "it has a majesty of its own, and all common shrubs must stand aside." The plant over which he was so much pleased was not over two feet high, but it was large enough to show its great beauty. Its clusters of flowers are smaller and more compact than of the common kind, and are of the purest possible white, while the foliage is of a very deep green, and of pleasing shape. It must be that our nurserymen find it difficult to propagate, or this Japanese Snow-ball would be more generally cultivated. An-

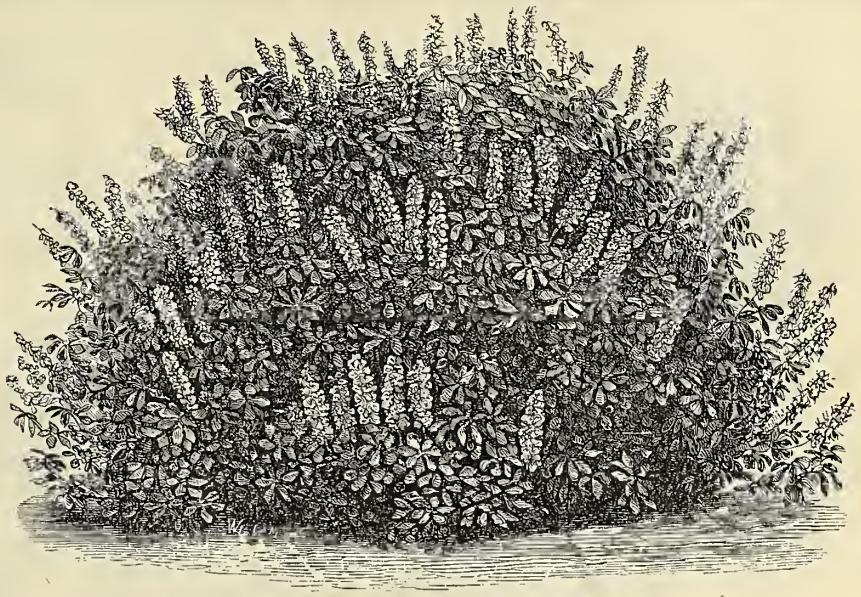


THE RED-FLOWERED YUCCA (*Flowers of real size*).

other shrub that should be better known is

The Dwarf Horse-Chestnut,

(*Æsculus parviflora*), also called Dwarf Buckeye. This should be planted where it can have ample room, as it will spread and form a large clump. When loaded with its long spikes of white flowers, it is really beautiful,



THE DWARF HORSE-CHESTNUT (*Æsculus parviflora*).

and it blooms in mid-summer, a time when flowering shrubs are scarce. Years ago the *American Agriculturist* gave an engraving of

The Japan Bladder-Nut.

The little tree that then furnished its first flowers for the artist, is now 20 feet or more high, and yearly increases in beauty as well as in size. Its finely-cut dark-green foliage is light and pleasing, and in the middle of July its large panicles of lemon-yellow flowers make it very showy. More than this, it is very ornamental in fruit. It has large clusters of bladdery pods, which, though usually pale-green, are sometimes tinged with pink, and in autumn have a most pleasing effect. The tree has a botanical name, given it in honor of a German botanist, "Kœlreuter," and *Kœlreuteria paniculata* is to many more difficult than "Japan Bladder-nut Tree," a name that suggests its relationship to our native Bladder-nut Tree, *Staphylea trifoliata*, which is also worth cultivating....Having heard of a

Red-Flowered Yucca

in the interior of Texas, one of my friends, who is fond of such plants, has, after much trouble, procured it. The foliage is narrower and stiffer than that of the common "Thready Yucca" or "Bear-Grass" (*Yucca filamentosa*), and, like that, has loose threads upon the margins of the leaves. The flower-stalk is about three feet high; the individual flowers, though small, are numerous, and the color may be described as a very pale pinkish scarlet. The plant, while not especially showy, is interesting. My friend has it in a cool greenhouse, not having stock enough to yet test its hardiness. A few flowers are sent, that you may make a drawing, to show their shape. If you imagine a branched spike, about two feet long, clothed with such flowers, you will get an idea of the much talked of Red-flowered Yucca. It is not strictly a *Yucca*, its proper botanical name being *Hesperaloë yuccæfolia*....Among the recently introduced hardy plants that are destined to become popular, are the

Double Pyrethrums.

I see that you not long ago gave an engraving of one of the Insect Powder Pyrethrums, which, except in color, is much like an Ox-eye Daisy. The double ones, of which there are many named varieties, have much the appearance of a China Aster. But unlike that, they are hardy perennial plants, beginning to bloom in June, and continuing for a long time. The colors range from white, through many shades, to crimson, with variegated forms....Plants that are much lauded abroad are so often a failure in our very different climate, that it is pleasant to note a success. Much had been said in praise of

The New Bedding Violets,

as they are called. It is claimed that these are hybrids between the well known *Viola cornuta* and the common Pansy. At any rate, they seem to have the continuous blooming character of the former, and show a considerable variety in their color, which may be due to the Pansy. They range in color from whites and yellows to a deep violet, and many are strikingly variegated, and have a pleasant but not strong fragrance. The plants have stood up well, and kept in continuous and abundant bloom from April until August, and thus far promise to be valuable in our climate, so trying in summer upon all violets, save some natives.... The other day, on going to a part of the garden I had not visited recently, I saw at a little distance a mass of bright red that I did not at first recognize. Upon approaching it, I found it to be the showing bloom of the old

Bee Balm, or Oswego Tea,

a large clump which I had forgotten. It makes such a brilliant mass of scarlet, it is a pity that it is a native plant, a perfectly hardy one, that can be grown without trouble. If it were only a tender, "miffy" thing, and sold at a dollar for a plant, in a little pot, how popular it would be! But stick it anywhere, and it will grow; hence like many other beautiful native plants, it is a rarity in gardens. Besides the names above given, it is also called "Red Balm," "Crim-

son Balm," and in some parts of the country, "Bergamot," the last name being one often given to several aromatic plants. The botanical name is *Monarda didyma*, and it grows wild, though not very abundantly, in all the Northern States. It continues long in bloom, and is a really good hardy plant.

THE CRIMSON BALM (*Monarda didyma*).

TWO NEW BEDDING VIOLETS.—(*See previous page.*)

Ferns for the Dwelling.

Americans visiting Covent Garden Market, the great flower-mart of London, will be surprised at the large number of Ferns in pots on sale, and may wonder if there be a demand for them. If he walks through some of the streets of residences in that city, he will see at nearly every window on the lower floor either a window-box well filled with Ferns, or several pots of them, all in apparently good condition. If interested in such matters, he will wonder why we have so few Ferns in window culture in this country. In the London atmosphere, with its "blacks," so proverbially unsuited to plant growth of all kinds, are Ferns growing in full vigor. The trouble is in our manner of heating our houses. Where anthracite coal is the chief fuel, plant culture of all kinds is difficult, and that of Ferns especially. Even in those localities where bituminous coal is burned, the atmosphere is rarely suited to Fern-growing. England being an island, has of course the advantage of us in its generally moist atmosphere. In spite of our unfavorable natural conditions, rendered worse by our methods of heating, no doubt that by proper care in selection, much more may be done in Fern culture than is generally supposed possible. Not much can be done with our native Ferns in house culture, because so few are evergreen, and they die down just when wanted. Still, the most suitable exotic Ferns for house culture now cost but very little. Among those found most successful is *Pteris serrulata*, a delicately-cut, dark green species. The variegated *Pteris quadriaurita*, var. *argyrea*, is very handsome, and has done well in room culture. Some of the beautiful Maiden-hair Ferns, especially *Adiantum cuneatum*, do well in England, and should be tried here. *Davallia bullata*, the Fern of which the Japanese make curious forms, as described elsewhere, is said to succeed in hanging baskets, and *Dicksonia antarctica* has succeeded as a window plant. One of the most common of our native evergreen Ferns, after Polypody, is *Aspidium acrostichoides*, not very delicate in outline, but of a good color, and a robust plant. We have not known it in window culture, but have no doubt it would succeed. This and others among our native evergreen species should be tested in the house by those interested in these plants. They should be taken up and potted at once, in order that they may become well established before taking them in-doors, and the change from the open air made as gradually as possible.

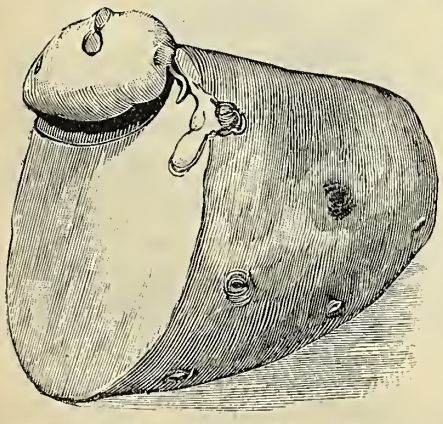
Grasses for Winter Decoration.

It would surprise our readers, could we give the money value of the dried grasses annually imported from Europe for the decoration of American homes in winter. Some of these imported grasses are well enough, but others, which come over in such unnatural colors, being dyed orange, scarlet, and even black, had better be left at home. It seems quite wrong that a large sum of money should go out of the country for these dried grasses, when every one of them could be grown in one or another portion of our wide domain. The readers of the *American Agriculturist* mostly live in the country, and of those who do not, the majority make an annual visit there, and all can, by taking a little forethought, provide themselves with grasses quite as useful for winter decoration as those that come from any other country.

Grasses, as decorative plants, are valued, not for their color, but for beauty of form. Those who wish to collect them for winter use, must observe two points: To gather them when they first come into flower; and, to dry them in a natural position. The time of gathering is especially important, as most grasses, if collected when approaching ripeness, fall apart in a most annoying manner, and by "making a litter," are a source of annoyance rather than of pleasure. It is not necessary to specify the kind to be gathered. Take whatever appears to be pleasing now, and it will be quite as much so when dried. Watch the grasses, and when they seem to be in perfection, cut them. There are some species, not especially graceful, that may be tied in small bunches, and hung up in a shady place to dry. Others, with a graceful, drooping character, if thus treated, will be spoiled. If hung up to dry, their branches will be reversed, and in drying, lose their pleasing habit. Such should be dried in their natural position. One way of doing this is, to have a box, or boxes, of dry sand, and insert the stems in this, either singly or in small clusters, while drying. If sand is not available, any ingenious person can contrive some other method of holding them in the proper upright position. The drying is best done in an airy, shaded place, as direct sunlight may fade them. After drying, they may be spread, or placed in shallow boxes, but not too many upon one another, until wanted for making up. Some works give directions for dyeing, bronzing, and otherwise making grasses unlike themselves, to all of which we object. The only allowable treatment, to our notion, is to use a dye to restore the green color that faded in drying.

New Potatoes from Old.

Nearly every summer there are sent to us specimens of old potatoes, within which are newly-formed tubers, sometimes a mass of them, each of the size of a pea and upwards. A specimen from Isaac Hagaman, Esq., New Haven Co., Conn., in July last, is of more than usual interest, as it clearly shows the real character of this unusual development. For an old potato to bear new ones upon its exterior is a rather common occurrence; it is their production within the substance of the tuber that attracts the attention of those who meet with them. In order to understand the nature of this phenomenon, we must see that the potato, the tuber, though often regarded as a root, is really a stem developed in a peculiar manner, to serve a particular purpose. When a potato is exposed to the proper temperature, the buds or "eyes" start into life, and produce stems or "sprouts." If this takes place in partial darkness, the shoots will often grow to the length of several feet, while the tuber, having given up its contents to support this growth, will be shrivelled and exhausted. If this growth takes place in contact with the soil, roots are formed at the base of the shoots, and each one becomes an independent plant. In this case it is plain that the contents of the tuber, the starch, etc., have been transformed into stems, often with imperfect leaves upon them. By proper management, the growth, instead of appearing as long, weak sprouts, may be made to develop as tubers or small potatoes, a method sometimes resorted to by gardeners to produce new potatoes in winter. Potatoes of the previous year's growth are kept through the summer in a cool cellar, all shoots being removed as they appear. In autumn, the potatoes are placed in boxes in layers, alternating with five or six inches of garden soil. The boxes are closed, and placed where the temperature averages 60°. In about three months, the old potatoes thus treated will be found to have formed a crop of new ones,



NEW POTATOES WITHIN AN OLD ONE.

their contents being transferred to the young tubers without the aid of leaves. This method was formerly employed in England for producing new potatoes in winter, but they are so much inferior to those raised in forcing-houses, that it is but little followed at present. The production of new potatoes on the outside of the old ones is easily understood, but when they make their appearance on the interior of the old tuber, it naturally causes surprise. The engraving shows one-half of the specimen referred to, the new tuber having broken through the skin of the old one, was partly exposed, and thus attracted attention. In all the specimens we have seen, the skin of the old potato was very dry and tough. When the conditions are such as to excite vegetation, and the eye begins to form a new tuber, the young growth finds less resistance from the soft, starchy mass of the interior of the old one, and being unable to break through the toughened dry skin, naturally pushed inwards instead of outwards. In the specimen a very small tuber, just forming and pushing inward, was discovered, and is shown at the right hand of the larger young tuber. As the buds on a stem are the points of growth, each bud being the seat of a special vitality, the same may be said of the "eyes" of the potato; they are really buds, and the points at which growth is active, while the rest of the tuber is essentially a mere mass of material to be used by these buds; under some conditions this nutriment is built up into stems and leaves; but when the surroundings are not favorable for this, then the growth expends itself in forming other and smaller tubers. If possible, these small tubers are found on the surface of the old one; but if the skin of that is hard and dry, the young tuber grows in the direction of the least resistance, which in the cases cited is towards the interior of the old potato.

A FERN TURTLE—INTRODUCED FROM JAPAN.

Living Succotash.—"A. W." writes us that his Lima Beans being planted near some tall Sweet Corn, the vines seemed to prefer the corn-stalks, and would run upon them in preference to the poles that had been provided. He asks if it would not be a good plan to plant the two together, and allow the vines to run upon the corn-stalks in place of poles. There are several objections to doing this, and nothing in its favor. Lima Beans are usually perverse in their ways, and if corn-stalks were provided as supports, would no doubt avoid them, as they often do the poles, and in any case they would at first need to be trained to their support.

Japanese Horticultural Devices.

A most interesting corner in that wonderful Centennial Exhibition, was the Japanese Garden. One who had lived many years in Japan, informed us that this was an exact reproduction of the gardens to be seen in the towns and cities of that country, where the prevailing style is to produce as great a variety as possible, in a small space. In this little garden there was a "lake," that must have held at least a barrel or two of water, with various aquatic plants. A rock-work was near by, the whole of which could have been taken off in a wheelbarrow. Then there were forest trees, three or four of them, some said to be a century or more old, but they had been dwarfed to bring their roots within the compass of a good sized pot. There were curious sculptures in stone, and various other matters peculiar to the ornamentation of Japanese gardens. Last spring a Japanese friend made us acquainted with a horticultural device of the gardeners of his country, which we did not see at the Centennial. A very pretty Japanese fern, *Davallia bullata*, has slender, scaly, root-stocks, the size of a goose-quill or smaller, and two feet or more long. These long slender stems the Japanese gardeners make up in a great variety of forms, putting with them moss, fine roots, or other material that will hold moisture. Wreaths, squares, diamonds, and other shapes are made up of these stems, and some moisture retaining material, and are hung up in the houses, or in shady places in their little gardens. If kept properly moistened, these stems soon produce fronds, very beautifully cut "fern-leaves," three to five inches high, and soon form a beautiful living wreath. Some of the devices brought by our friend are rather grotesque. Tortoises are made of a frame-work of the same stems, with a filling of the material to hold moisture. There are besides figures of large lizards, buffaloes, deer, horses, etc. While these attempts to represent animal forms may meet the Japanese taste, we do not regard them as pleasing as the wreaths, and other shapes. When the fern fronds have grown abundantly, the form of the animal, which is sufficiently plain when represented by the naked stems only, is not very distinct, indeed nearly lost.

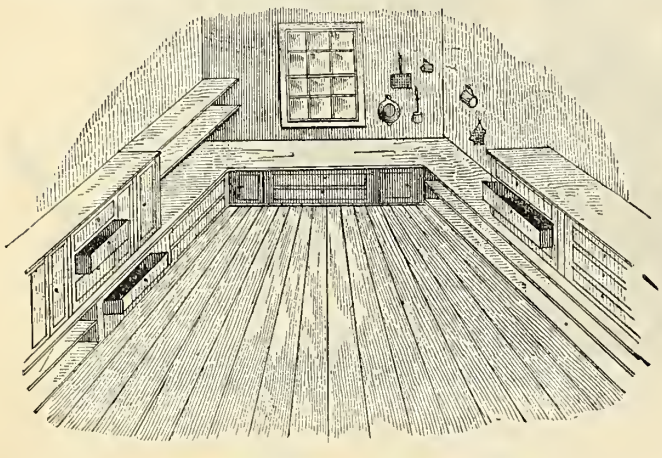
THE HOUSEHOLD.

☞ *For other Household Items see "Basket" pages.*

A Well-arranged Pantry.

BY L. D. SNOOK, YATES CO., N. Y.

In this age of multitudinous articles in the shape of china, glass, and other ware used in cooking and at the table, a special room in the form of a pantry is needed for their proper care and protection. In the accompanying engraving is shown a portion of a pantry that is well arranged and convenient. The window is placed at the end of the room, while



A COMMODIOUS AND WELL-ARRANGED PANTRY.

around three sides is put a shelf, thirty inches in hight, and from fifteen to twenty inches wide. Beneath this shelf are placed drawers, cupboards, shelves, etc. The shelf situated in the end of the pantry is left unobstructed for cutting meat, bread, mixing pastry, and even for washing dishes. It will be found the most convenient and most used part of the whole room, being near the light, and with plenty of space. At either side of the pantry are arranged other cupboards, shelves, drawers, etc., in any manner thought most convenient, and are used for holding table linen, glassware, china, silver, etc., while those near the floor are for kettles, pans, pails, and other coarse kitchen ware. Some may think ten or a dozen drawers are far too many for one pantry, but in practice, more, instead of a less number, could be economically used. It is best to furnish some of the drawers with locks and keys, that they may be securely fastened when desired. Paint the wood-work in some light color; it is better to simply oil the top of the shelf near the window with raw Linseed oil, as it is much used, and paint soon wears off.

Over-work at School.

BY FAITH ROCHESTER.

Words of warning still seem to be needed, lest children be done to death in the process commonly called education. The brightest ones are in the most danger, though parents and teachers seldom seem to be aware of this. "It is no task for him to get his lessons," they say. "She learns so easily, she can take another study as well as not." But brain work still is *work*, though done with pleasure. Some play uses up vitality, and the best beloved occupation may exhaust the nervous force, if too long continued. There is no more sad but truthful application of the old saying, "Haste makes waste," than in the crowding forward of children at school, especially the bright ones.

Within the last year I have seen some sad cases of breaking down among school children, and there are other bright young minds and bodies within my range of observation for whom trouble surely waits, unless preventive measures be taken very soon. The little boy delights his parents and teachers by his readiness in learning his lessons, and he is rapidly promoted from one grade to another, becoming more and more ambitious as he sees the pride of his parents and the pleasure of his teachers. Nature makes frequent protests, but these pass unheeded. The boy grows nervous, has impaired digestion and circulation, for Nature is saying as plainly as possible, "I cannot give this boy the good, healthy body that he needs, if you persist in letting the brain use up all his nervous force or vital energy. He cannot eat his cake and keep it too. There are limits to his constitutional vigor. If you persist in over-drawing upon this capital invested in him, he must break down."

Very few teachers and parents understand Nature's language. They do not know that cold feet, constipated bowels, or catarrhal symptoms, may result from over-study, as much as do headache or brain disease of any kind. But children would not so soon break down if their bodies were not neglected and abused at the same time that their brains are overworked. The exercise of the brain calls the blood to that part, and this alone has a tendency to disturb the circulation of the blood. The equilibrium is farther impaired by insufficient dressing of the feet and legs, especially among little girls. But some little girls are better protected from the cold in winter by thoughtful mothers than little boys, who wear the fashionable short trowsers and no leggins. Well-dressed little girls now wear for winter clothing, long woolen under-drawers, coming well into the boot-top, under the thick stockings, with thick leggins for out-door wear. They also wear long-sleeved under-garments and outer-garments that afford real protection; double mittens in the coldest weather, and hoods or "nubias" that protect the forehead and sides of the head, as well as the top. One of the oldest and most important rules of health is this: "Keep the feet warm, and the head cool,"—not *cold*. If the blood is driven from the surface of the body by cold, especially at the extremities, internal organs are more or less congested by excess of blood, and in this way many different diseases are brought on. Poor food and bad air make the blood impure, and this poor, devitalized blood cannot properly nourish the various organs. Something must fail, either the physical health or mental vigor.

Sometimes the brain fails. Actual insanity may result from over-work of the brain. Sometimes the bright, precocious child becomes almost idiotic from combined over-work of the brain, excitement of feeling, and neglect of the body. More frequently the mind becomes simply weakened, and can no longer confine itself to hard study. The brain must have a long rest, and probably never fully recovers its lost power. The brain itself, though the organ of the mind, is but a part of the body, and its failure is a failure of physical health. But sometimes the mind seems even clearer and stronger than ever, as muscular power fails. A time of especial peril to girls is the age between twelve and fifteen. Nature then seeks especially to round out and develop the woman from the child, and over-work of any kind tends to thwart her plans. Many a poor girl who started well in life, physically speaking, goes into a decline at this age, because of the foolish haste of the parents about her schooling. In this "slaughter of the innocents," piano practice counts heavily.

But the child is not "crowded" with study, the parents and teachers say. It learns easily, and has plenty of time to play. Just such children I have seen break down—those who never needed to be urged to their lessons, who conscientiously performed all their piano practice without a murmur, or an expressed wish to play out-doors instead. Indeed, one of the first signs that the pupil is overworked is its reluctance to join in active physical sports. There is a limit to the amount of vital energy each one possesses at any time, and if this is habitually expended, mostly by the brain, the rest of the body can have little, and in this way all of the bodily functions are impaired. The over-tasked pupil probably seeks recreation in light reading rather than in active out-door sports, and this usually makes a bad matter worse.

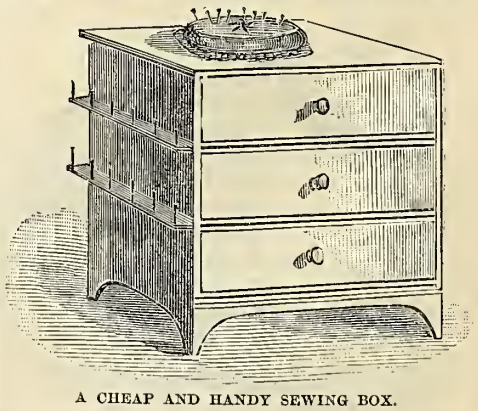
That Gem Recipe.

I undertook to tell how to make water gems, but the directions did not get into print as I intended. The measures were given correctly—three cups of water (or milk,) to four cups of freshly sifted, entire wheat flour, or a *little* less of unsifted, genuine graham flour. But the water should always be stirred into the flour, and it is easier not to turn it all in at once. This is the way I have made gems every day for many months past. First the fire: I fill the fire-box more full of wood, than on any other occasions, and turn the heat upon the oven, set the gem-irons upon the top of the stove, and then sift some of the entire wheat flour, unless I have some that has been sifted within a few days. Flour freshly sifted, lies so lightly together, that four cups of this is not much more than three of packed flour, just from the barrel.

I measure out four teacupfuls of the sifted flour into a pan, then three teacupfuls of cold water, pouring in two, and setting the last one beside my pan, while I stir the rest together smoothly. Then I stir in the last cupful. I rub the gem-irons over with a buttered rag (using a fork, the irons are so hot,) and immediately dip the batter into them as they set on the hottest part of the stove. My irons are large, and the amount I stirred up just fills the pans. I put them into the *hot* oven, and then look to the fire again, usually adding a stick or more of wood if I have been hindered while stirring up the batter. Until lately, I thought it best to set the irons upon the rack and bake the tops a little first. But since my stove has been well cleaned, this burns the tops, and I find it best to set the gems directly upon the oven bottom. They always rise some while baking, and should be delicately browned all over when done. Do not take them out too soon, but when they are really done (so that they will not sink in a little at the top,) do not leave them in the irons longer. MINNESOTA HOUSE-KEEPER.

A Simple Work Box.

I saw a work box in the April number of the *American Agriculturist*. Inclosed is a plan of one I made some time ago, and find very useful. It is 10 inches high, 8 inches wide, and 6 inches deep. The drawers are 2 inches deep inside, and are made



A CHEAP AND HANDY SEWING BOX.

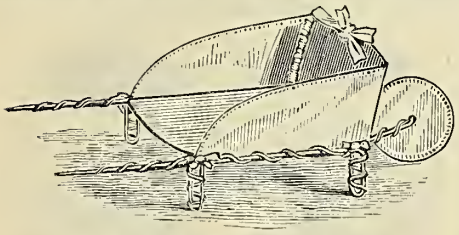
of ¼-inch material; the rest is of ⅛-inch boards. Each drawer has a brass knob. The top projects ¾-inch all around. Two strips, with wires for spools are placed on one side, the other end has a strip of leather tacked on for scissors. A pin-cushion is placed on the top. The cost of everything besides labor was 20 cents. A. H. D.

A Hint to Fruit Canners.—"Reader writes us from Burlington, Kansas, as follows: "I notice that in an article on canning fruit in July last, you say, 'placed in jars previously warmed

with hot water.' Canning fruit is hot enough work without any hot water or hot jars around. Instead of this, wrap the jars with a towel saturated with *cold* water, and pour in your hot fruit. Any one who has not tried it will naturally say, 'that is the sure way to break the jars.' I would say, just try one jar and see. We have canned hundreds of jars, one and two quarts, and have never broken one in filling. I can't explain why, but simply know that it is the fact."—[We have had the same suggestion from others, and we give the above without having tried the method ourselves.—EDS.]

Wheel-barrow Needle-book.

The parts of the needle-book represented in the engraving, are made of light paste-board, covered



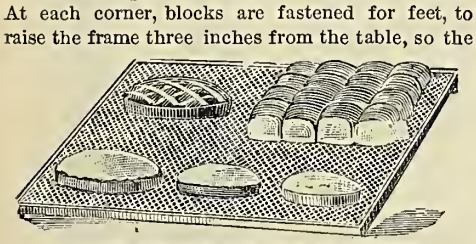
A WHEEL-BARROW NEEDLE-BOOK.

neatly with drab velvet. A small drab-silk wire, wound with the finest of blue chenille cord, is sewed around the bottom, and is bent at the proper intervals to form the handles, legs and support for the wheel. To the back of the barrow on the inside, are fastened three flannel leaves for needles, red, white, and blue in color. A bow of narrow blue ribbon covers the stitches which secure them, and finishes the places where the legs meet the barrow. A spool of cotton may be deposited in the center, and the whole makes a convenient and ornamental article for the sewing table. AUNT IDA.

Frame for Cooling Pies, Cakes, Etc.

Every house-keeper knows the consequence of letting pies, tarts, or cake stand on a solid surface while cooling. The pie-crust, which should be flaky and light, becomes soggy and moist, and the bottom of the brown crusty cake soaks and loses its delicious flavor. Some kinds of fruit pies are so juicy that they have to be put on a plate when removed from the tin, but unless that renders it necessary, they should never be put on a plate until cold.

The frame shown in the engraving is made of strips of pine, 3 feet long and 2½ feet wide, and covered with gauze wire, such as is used for sieves. At each corner, blocks are fastened for feet, to raise the frame three inches from the table, so the



A COOLING-FRAME FOR PIES AND CAKES.

air can circulate freely beneath it. The wire is fastened to the frame by small tacks. The frame is so simple that any one handy with hammer and saw would have no trouble in making it. L. F. B.

Some Hints About Pickles.

Something was said about pickles last month (p. 336), but that article does not meet all the inquiries on the subject that have come to us. While the majority agree that pickles are not really food, in the sense of being nutritive, most persons prepare and serve them upon their tables. Whether pickles are nutritive or not, people in general like them, and so long as this is the case they will be made—and it only remains for us to endeavor that they be made as wholesome, or as little harmful, as possible. At the best, a pickle is a condiment; of whatever it may be made, it is merely a convenient vehicle for conveying Acetic Acid (in the form of vinegar) together with various aromatics or spices into the system. The material of the pickle may be looked upon as a sort of sponge to allow us to partake of vinegar, either plain or spiced. The vinegar, while it allows us to preserve the articles used for the pickles from decay, at the same time renders them so indigestible that the chief effect to be expected from eating them is from the vinegar and the spices. A glance at the list of the many vegetables used as pickles shows that but very few have any marked flavor of their own, but derive their taste from the vinegar and spices. The chief exception to this general statement is the Olive, which is imported preserved in brine; this, from the quantity of oil it contains, may be somewhat nutritive, though it is consumed solely for its appetizing qualities.

The leading pickle—in this country, at least,—is the Cucumber, with a decided flavor of its own, as has the Capsicum or Pepper and the Onion, also often pickled. To these may be added the Black Walnut and the Butternut, both of which, when taken very green, make an excellent pickle, with a characteristic flavor, much like that made from the European or English Walnut. Among the articles with little character of their own but often pickled are: String-beans, Cauliflower, Cabbage, green Tomatoes, unripe Musk Melons and the rind of Watermelons, Martynias, Beets. Indeed almost any tender vegetable may be used for the purpose. Pickles may be divided into four classes. 1st, those in which the vegetables are preserved in vinegar only. 2d, in which spices of various kinds are added to the vinegar. 3d, mixed pickles in which several vegetables are used and surrounded by a thick sauce of which mustard is an important ingredient. 4th, sweet pickles, which are preserved in a thin syrup made of sugar and vinegar, usually highly spiced. For pickles of this class, Peaches, Pears and other fruits are often used, and they have become of late years very popular.

We call attention to what was said last month on the improper greening of the showy pickles offered for sale. The colorless whiskey vinegar can now be had in all large places under the name of "white-wine vinegar." This may be used, if desired, as it is quite wholesome, but without the pleasant flavor and odor of the dark-colored cider vinegar. We also refer to that article upon the salting of the different vegetables before they are put into vinegar. With most vegetables, unless they are first properly salted, the vinegar will not penetrate them in a satisfactory manner; but before they are placed in the vinegar the salt must be nearly or quite all removed by thoroughly soaking them in successive changes of pure water.

Spiced Pickles

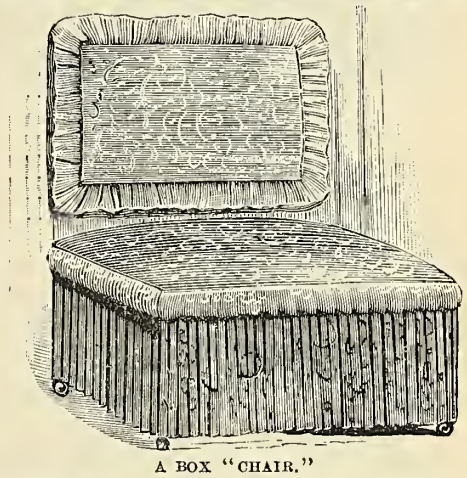
are merely pickles of any kind to which aromatics have been added; these are usually boiled in the vinegar for a short time, and the vinegar thus prepared is used instead of the common article. A skilled housekeeper needs no special recipe, as she adds such spices as she thinks will answer, knowing that if the pickles are only pungent they will be acceptable. One recipe gives for each quart of vinegar: Black Pepper, 2 oz.; Ginger Root, 1 oz.; Allspice, ½ oz. Bruise these in a mortar, and simmer gently for a few minutes. If an enamelled vessel is not at hand put the ingredients in a glass or stone jar, place this in a vessel of water and keep hot upon the stove, not boiling, for a day or two. Afterwards strain and use like ordinary vinegar. If a more pungent vinegar is desired, add a teaspoonful of Cayenne.

Sweet Pickles.

These are made from Peaches, Pears, Plums, Apples and other fruits, ripe but not too mellow; over-ripe Cucumbers, Watermelon rind and other fruits are also used. The article to be pickled is first cooked in water until a straw will pass through it. The vinegar is prepared thus: To each quart of vinegar add Brown Sugar, 3 lbs.; Stick Cinnamon, 4 oz.; Cloves, 2 oz. Bruise the spices, tie in a muslin bag and boil with the vinegar and sugar for five minutes. Pour the liquid over the fruit or other material placed in a jar. For three days in succession, heat the liquid to the boiling point, with the bag of spices, and pour over the fruit.

"Chair" Made from a Packing Box.

A very comfortable and handsome "chair" can be made from an ordinary packing box. The box should be about 1¼ foot wide by 2 feet long, and not more than 14 inches deep. If deeper it will make the "chair" too high, and so take away much from its ease. A caster should be fastened firmly to each corner; after which the box is ready to cover. Cut from large-flowered chintz as many breadths, sixteen inches deep, as are necessary to go around the sides of the box three times, run them together, make a hem an inch deep around the bottom, and pleat into 1½ inch side pleats. Let the lower edge of the flounce come slightly below the bottom of the box, and lay the extra length over on to the top of the box, where it is fastened with small tacks, so that when the cushion is on the tacks will be covered. To make the cushion, cut two pieces of strong muslin, or partly-worn ticking, the size of the top of the box, and a piece three inches deep, which is to be sewed between the top and bottom of the cushion as for a mattress. One side should be left unsewed until the stuffing has been put in. For this hay or straw can be used, or worn-out comfortables or quilts. Enough of whatever is used must be put in to fill the



A BOX "CHAIR."

cushion tight. Cut from the chintz a piece the size of the top of the cushion and make a strip five inches deep, and long enough to go once and a half around the cushion. Gather this strip and sew one side to the piece of chintz. Draw over the cushions and sew the other edge of the puff to the underside. The cushion can be tacked firmly to the box along the front, by holding it up from the back and catching the tacks through the edge of the puff where it is sewed to the cushion. For the back make a pillow four inches less in length than the box, and not quite as broad as long. Feathers make a good stuffing for this, or it may be filled with whatever is used for the cushion on the box. Cover the pillow with chintz, and put a ruffle of the chintz two inches wide around it. The ruffle looks better if made double instead of hemmed. Three loops of cord are sewed to the top of the pillow, one at each corner and one in the center, far enough below the edge to keep them from showing above the ruffle, and by these the pillow is hung on nails against the wall back of the covered box. This is one of the most satisfactory of home-made "chairs." MRS. BUSYHAND.

Gems,—"A. W." writes us: "I would like to suggest to a 'Londoner,' as well as others, that there is less difficulty in making good gems, if eggs are used. One egg, well beaten, one cup sweet milk, a little salt, and sufficient Graham flour to form a rather stiff batter, will make excellent gems. The gem-pans must be heated well, greased thoroughly, then filled even full with the batter, and put into a very hot oven to bake quickly.

BOYS & GIRLS' COLUMNS

The Doctor's Talks.

Last month I described the Peach and Cherry, and then went on to the more complicated Blackberry, omitting the Apple, which of all fruits you would most like to know about. In describing fruits, an examination of

Fig. 1.—SECTION OF APPLE-BLOSSOM.

one will often help us to understand how another is made up. You will recollect that in the first flower Talk, when we began with the Buttercup, it was shown that all the different parts of the flower were placed on or started from the end of the flower-stalk, and that the name *receptacle* was given to that. It was seen last month, in the Blackberry, and especially in the Strawberry, that

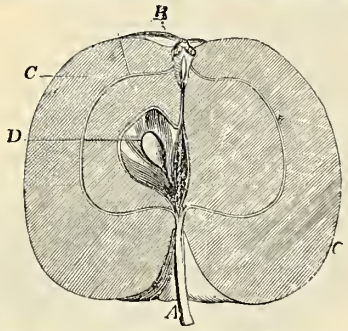


Fig. 2.—VERTICAL SECTION OF APPLE.

the receptacle increased in size after flowering, and by the time the fruit was ripe it became, especially in the Strawberry, a very important part of that which we eat as the fruit. To understand the Apple as a fruit,

We must start with the Apple-Blossom.

This, fig. 1, we used in the June Talk, but will bring it here to have it at hand to refer to. When you examine an apple-blossom, or the bud before it opens, you will notice that it is upon a small stalk and that the very end of this stalk is enlarged, or swollen, usually in the shape of a boy's top. The sepals, petals, and stamens are attached to the upper part of this, and you will not be able to find anything corresponding in appearance to the receptacle as you have seen it in the other flowers. To understand the botanist looks upon the apple-flower, you may first examine the related Rose; fig. 3 gives the unripe *hip* or fruit of that in section. Here the receptacle, instead of being rounded that it may have room for the many pistils on its *outside*, as in the Strawberry and others, is here hollowed out, like a thimble, and the numerous pistils are attached to its *inner* surface. If the Rose had but five pistils in the center, and this hollow receptacle were to be closed around, and so attached to them as to form one mass, you would have the same structure as in the apple-blossom. Outside of all is the *calyx*, which surrounds and is united with the receptacle, at its lower part, but above is seen as five spreading sepals. When the flowering is over and the petals and stamens fall away, there remain the pistils, the receptacle and the calyx to grow and become the ripe fruit.

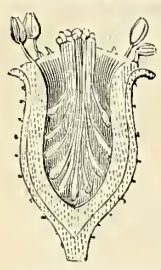


Fig. 3.—SECTION OF ROSE HIP.

Fig. 4 SECTION OF WINTER-GREEN-BERRY.

Great Changes Take Place

in the form of the Apple. The flesh grows in such a manner that the point where the stem is attached is soon at the bottom of a deep cavity. At the opposite end of the fruit we find the sepals, or parts of the calyx, remaining in a more or less dry condition, and if you remove these carefully you may be able to make out the remains of the pistils (*styles* and *stigmas*), and often there will be some withered stamens attached there. The *ovaries* of the pistils—for there are usually five—are in the fruit much changed; their walls are those tough, parchment-like, almost horn-like pieces which inclose the seeds, and are called the core. The great mass of the fruit of the Apple is the much enlarged calyx; that part of the flesh immediately surrounding the core is the juicy receptacle. In figure 2 the parts of the Apple are shown. At *A* is the stem, at the bottom of the fruit. Many regard this part of an Apple as the top, but you will find at the beginning, when the petals fall, that the end to which they are attached is uppermost, and it is only when the fruit gets heavy and bends the stem that the end to which that is attached appears to be the top. The shrivelled remains of the sepals are at *B*. The great bulk of the flesh of the Apple, *C*, is the enlarged calyx. One of the ripened ovaries with a seed is at *D*, around which is the receptacle. The Apple you see is another illustration of the fact that it is not always the ripened pistil that we esteem as the fruit. No doubt all of you who live near where they grow are fond of hunting Checkerberries, or Wintergreen-berries, as they are often called. When you come across these bright scarlet fruits, stop and examine before you eat them, and see what it is that makes the bulk of the berry. Fig. 4 shows one cut open, and you see the fleshy part is the enlarged calyx.

Fig. 5. MULBERRY.

The Blackberry and Mulberry

are much alike in general appearance. The former, as we saw last month, consists of many little fruits, but all from one flower. The Mulberry (fig. 5), on the other hand, is a collection of small fruits, each of which began with a minute flower of its own. The flowers of the Mulberry are small and crowded together on a slender stem. There are two kinds of flowers, staminate and pistillate, usually on the same tree; those which become fruit consist of a pistil and a fleshy calyx. In ripening, the calyx of the Mulberry flowers becomes the juicy and eatable part. A Pine Apple is much like an enlarged Mulberry. Here the parts of many flowers are crowded together and are united in a fleshy mass. Still if you carefully examine the "squares" or divisions on the outside, you can see the structure.

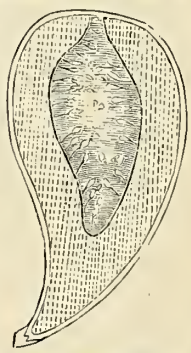


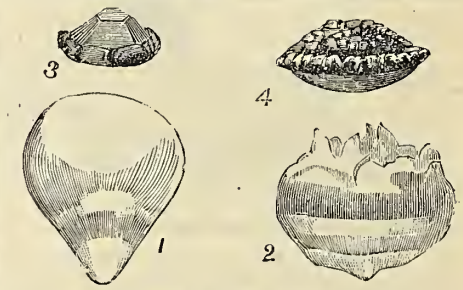
Fig. 6.—SECTION OF A FIG.

Still more puzzling is the Fig—especially in its dry state in which it is imported. Many suppose that the Fig has no flowers, but this is a mistake. It has a great many flowers, but they are very small and are out of sight. If you can get a chance to examine an unripe Fig, you can see that it is, as in fig. 6, a hollow stem, or receptacle, on the inside of which are great numbers of minute flowers. Some are staminate and others pistillate; the enlarged flowers are shown in fig. 7. When the Fig ripens, the parts of these little flowers and the receptacle upon which they grow become juicy and eatable.

7. SECTION OF FIG, WITH FLOWERS.

About Hail and Hail-Storms.

A young friend in New Jersey, who has asked many useful questions, has given me no more difficult task than to tell him "all about hail and hail-storms." In his letter he says that he knows that "hail-storms come in summer, and are very destructive," and he asks me to tell him about them. He could not have asked a more puzzling question, and in the above statement that hail-storms come in summer, and are very destructive, he has stated nearly all that is really known. Water, when it descends as rain, or as snow, is quite well understood, but its descent in the form of hail is so uncertain, that little is known about it. Hail generally falls in summer, in the form of drops of ice of varying size. Ordinarily, the "hail-stones," as they are commonly called, are not larger than a pea, but there is occasionally a storm in which the hail-stones are much larger. It is recorded that, in 1813, a storm occurred near Lyons, in France, in which the stones were of the size of lemons, and killed both men and cattle. There was a notable storm in 1847, in Georgia, during which there fell stones ten inches in circumference, and other cases are recorded in which even larger stones have fallen. Hail-stones, when large, are more or less pear-shaped, as in fig. 1, or onion-shaped, as in fig. 2. These large stones are not generally alike all through, but are transparent in parts, and often show opaque layers, as if made in part of frozen snow. In a general way, it may be said that their formation is supposed to be due to the meeting of currents of air of different temperatures, and, of course, containing different degrees of moisture. Figures 3 and 4 show some very regular and unusual hail-stones. But, as already said, there is nothing relating to atmospheric disturbances and storms, about which so little is known, as about hail and hail-storms. I do know one thing about them, though. Several years ago I visited a gentleman in Western New York, and found that all the windows



DIFFERENT FORMS OF HAIL-STONES.

upon the sides of his new house had been destroyed, and that all the glass in his green-houses had been demolished; besides which, the leaves from his fruit trees were stripped by the hail. I am utterly unable to tell my young friend any more about hail, as its coming does not appear to be subject to any known laws. It may be that at some time we shall know more about it than we now do, but at present it is impossible to predict its coming, or to take measures against it. THE DOCTOR.

A Vegetable Dish-Cloth.

Dish-cloths, as any house-wife will agree, are very important in the kitchen, but few have ever thought of planting the seed, and raising them in their garden. Yet kind old Mother Nature, who believes in law and order, has provided a dish-cloth plant, on purpose to teach her children the beauty of cleanliness, and that they may have no excuse for unwashed dishes, or rusty pans.

How many, I wonder, of our little readers, the young maidens who are learning to be good housekeepers, have seen and used this curious natural product, to wash up their dainty cups and saucers, or form into pretty ornaments, as unique presents for their friends. Perhaps some of those, whose homes are in the "Sunny South," may have done so, for the Papanjay, or Sponge Cucumber, as it is called, is a native of the East Indies, and flourishes best in warm climates, although by starting it under glass, it may be raised quite far North. Its botanical name is *Cucumis acutangulus*, and the vine itself is a most rampant grower, spreading out its squash-like leaves in all directions. The fruit it bears, is a long, narrow gourd, sometimes nearly two feet in length, within the outer shell of which, and inclosing the seeds, is found the sponge-like fibre used for dish-cloths, and which answers the purpose most admirably, better, some think, than anything prepared by art. One that was sent us last winter, might at first have

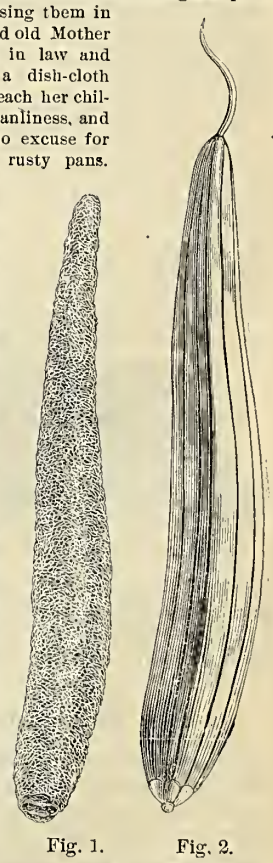


Fig. 1. Fig. 2.

heen taken for a dried fish of some kind, but when wet, it resembles a piece of Turkish toweling, being of the same light-gray color, and is quite strong. A lady in Georgetown, D. C., has one, which she has used for months, and when torn, darned it with cotton, as she would any other clotb. Figure 1 shows the sponge cucumber as it grows on the vine, and as you see, has a ridged shell, like the rind of a summer squash, and unlike the smooth round gourds, sometimes used as cups or dippers. Figure 2 shows the "cloth" when the shell or rind is removed. This central portion when cut open is ready for the many purposes for which it may he used.

Children can plant and tend this vine, which will prove an ornament to the garden walls, and when the cold days come, the girls will be glad of this strong fabric, to make up into watch-eases, card-receivers, holders for postage stamps, and a variety of other things.

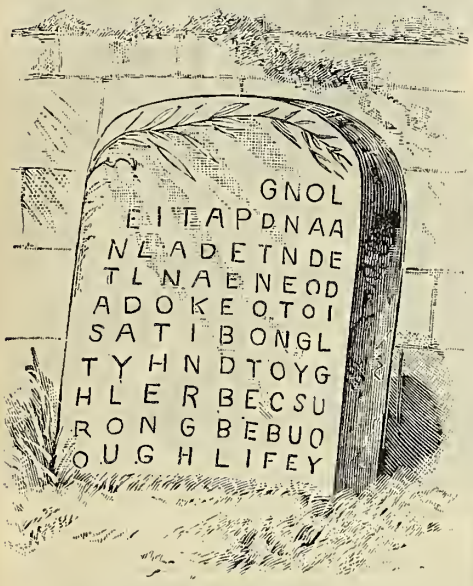
Our Puzzle Box.

GEOGRAPHICAL ENIOMA.

I am composed of 32 letters;
My 21, 5, 2, 6, is an is an island on the coast of Maine.
My 4, 25, 6, 16, 27, 19, 8, 21, is a town in Maine.
My 9, 25, 6, 1, 27, 31, 20, 21, is a town in New York.
My 29, 1, 7, 16, 10, 8, is an island in New York.
My 9, 15, 3, 21, 11, 20, is a town in Delaware.
My 30, 25, 24, 6, 25, 13, is a town in Mississippi.
My 9, 12, 22, 14, 11, 27, 7, 32, 21, is a city in Obio.
My 29, 19, 26, 12, 10, is a Cape.
My 18, 25, 3, 28, 6, 18, 17, 16, is a town in Ohio.
My 12, 25, 23, 21, 25, 24, is a town in Kentucky.
My whole is a proverb all should remember.

T. SCHWARMAN.

INSCRIPTION.—TRANSLATE IT.



NUMERICAL ENIGMA.

I am composed of thirty letters:—
My 12, 2, 7, 28, is a limited time,
My 8, 16, 17, 3, is a hollow place,
My 21, 29, 23, is a tropical fruit,
My 21, 28, 10, 23, 16, 30, 6, is used in war,
My 1, 22, 19, is a wooden vessel,
My 15, 9, 7, 25, is essential to health,
My 23, 28, 18, 2, 8, 3, is a country.
My 11, 13, 28, 23, 9, 30, is a verb,
My 26, 16, 8, 2, is a part of the human body,
My 20, 14, 28, is a possessive pronoun,
My 5, 2, 7, 8, 24, is a well known fruit,
My 4, 18, 7, is a common vegetable.
My whole is an old adage.

CHARADE.

My first comes with pattering feet, and blesses the homes of rich and poor alike. Children shout in merriment at the bright messenger, and flowers smile back its greeting.

'Tis one of God's greatest gifts; without it old ocean would cease to be, and all that is bright and beautiful on earth would fade into nothingness.

My second is of many shapes and colors, and enters largely into the embellishment of the young lady's toilet of to-day. It may he large or small, there may be few or many, but when tastefully made, it is a "thing of beauty." It is also the name of an instrument of war.

My whole is of unequalled beauty, and in its vivid light and majestic form there has been for ages past, and will have in all time to come, a sacred significance.

ENIGMA.

Find my first in tide and wavelet,
Seek it not in surf or foam,
Find my second twice in sleeping,
Look for third in dream and home,
Fourtb and fifth appear in picture,
Sixth and seventh are seen in slate,
Ninth is oft an interjection,
Eighth a personal pronoun makes,
Tenth and last appears in woman,
And is found again in man,
My whole by all should be resisted:
Guess the answer, if you can.

Two Problems on Uncle Sam's Income.—The official records say that during the past 20 financial years (1863-1882, inclusive, the years ending June 30), our General Government received from Internal Revenues, $2,931,227,331; and from Customs or Duties, $3,232,631,329, making a total income of over Six Thousand Million Dollars (**$6,163,858,660**). This is a trifle over an average of 308 Million Dollars a year. Allowing for 52 Sundays, and the fractiou over for the "Leap Year," the average income of "Uncle Sam" for 20 years past has been almost exactly a *Million Dollars a Day* for every business day. Calling the business day ten hours, this is a Hundred Thousand Dollars an hour; $1,666⅔ a minute, or $27.77 each second! It would take a good many clerks to simply count the money as it comes in, especially if they reckoned the odd cents.—Two PROBLEMS for the young Arithmeticians of the readers of the *American Agriculturist:* The Legal Silver Dollar weighs 412½ grains, and 7,000 grains make a pound Avordupois.—*1st Problem:* If the entire 20 years' income, given above, were in these Silver Dollars, how many wagon loads of silver would there he of a ton or 2,000 lbs. each?—*2d Problem:* Taking the constant income, how often would a wagon be loaded with these silver Dollars, that is, in how many minutes and seconds?

Old Sights With New Eyes.

The "Boat-shell," (fig. 1,) is fonnd in great numbers the whole length of our coast, and is prized by children as a toy. Sometimes dozens of them adbere together, and those lowest in the group cling to other animals, empty shells, or pebbles. Its form resembles that of a boat, half covered by a straight piece. Figure 2 represents the pretty purple covering of the Mussel. When living, tbe animals are found attached to timber and rocks, by their little byssus threads. They bang together in elusters, and many worms and other small animals hide among them. When a mussel is placed in a glass of water, it reaches out its foot, presses it against the dish, aud sccretes, in a groove on one side, a tough thread, one end fastened to the glass, and the other to the animal in the shell. Thread after thread is made in this way, until the mussel is fastened securely enough to endure the most severe storm. Owing to the abnndanee of oysters and clams, the mussel is not very generally nsed for food, but in Europe it is extensively eaten, and in the Baltic Sea, and on the coast of Fraucе, it is extensively cultivated. The little "Jingle Shells," are so called from the sharp metallic sonnd they have when shaken together. They are thin ronnd shells, both dark and light, with gold and silver lustre. They are hrilliant in Massachusetts Bay, and in childhood my schoolmates made them into neeklaces. They are very thin and delicate, so that a needle will pass through them easily. We attached one row flatly to a hand of black velvet, and another row as pendants to the lower edge. We made tbe hand just large enough to fit the neck snugly, and placed a velvet how at the back. My grandmother called them "Wampum," because the Indians decorated with them, hut we thought them quite pretty, and enjoyed wearing them very much. The "Snail Lunatica," (fig. 3,) is so cruel, that it almost causes one to ignore the heantiful globular shell, with greyish-blue out-sidc, and pink lining. It has teeth on its tongue, witb which it drills through the shells of oysters, clams, and other suails, and scrapes out the animal through the hole. Their eggs are laid in a ring, mixed with sand, and are often washed ashore. This suail is known as "Mermaids' Collars," and its beautiful form can be preserved by baking for sometime in a slow oven. The empty shells are the favorite resorts for the Hermit Crahs as their claws fit in so snugly. Many fishermen think this shell is natural to them and eall them "Jack-in-a-box," and "Stone-Lobsters." AUNT IDA.

Fig. 1.—BOAT-SHELL.

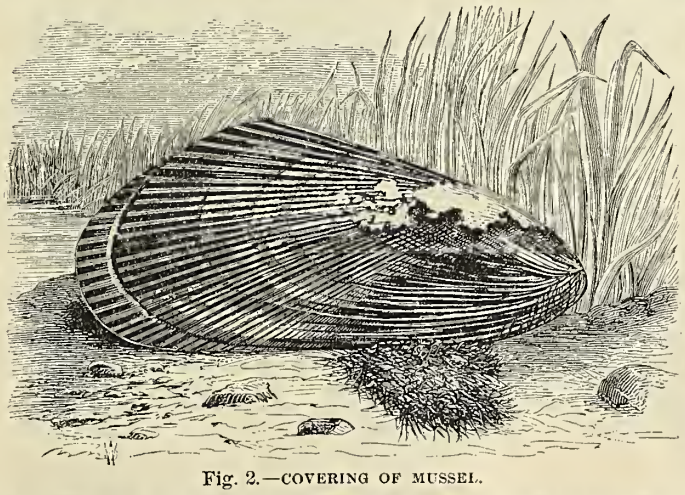


Fig. 2.—COVERING OF MUSSEL.

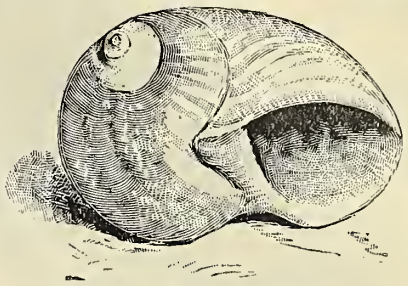


Fig. 3.—"SNAIL LUNATICA."

The Picnic on Bear Hill.

BY AGNES CARR.

Mrs. May was frying doughnuts in the hack kitchen, her rouud motherly face one rosy glow, for the thermometer stood at ninety in the shade, and the roaring fire in the stove raised it many degrees higher. But "necessity knows no law," and Farmer May would have thougbt the world had turned upside down, if he had sat down to breakfast without finding a fried eake to eat with his coffee; and Mrs. May was not the woman to disappoint bim. She had just dropped the last indigestible lump of dough into the boiling lard, when the outer door was burst open, and in dashed her son Nat, closely followed by his sister Rose, their eyes sparkling with delighted anticipation.

"Obl mother! mother!" cried Nat, "what do you think! the hlaekberries are ripe on Bear Hill."—"And Dave Van Riper bas promised to take us up there tomorrow!" exclaimed Rose.—"And have a picnic at Long Pond," put in Nat.—"We can both go, can't we, mother?" asked Rose, anxiously.—"Oh, I think so," responded Mrs. May, heartily, for she delighted to forward her children's pleasure, "if you are up hright and early, to finish your work in good season."—"And me, too! me, too!" cried four-year-old Dolly, from a distant corner, where she was hugging a long-suffering and much-enduring kitten, that rent the air with its piteous mews. "Dolly wants to go to nicpic."—"So you shall," said Rose, hastening to rescue the unfortunate eat from her young mistress' too loving embrace, "hut you must not tease poor pussy so."

Bubble, bnbble, bubble, went the lard-kettle, and Mrs. May hurried to draw out the hrown twists, which all the young folks said were the thing for the morrow's lunch.

"I hope it will be a clear day," remarked Nat, as he came in with the evening milk; and all three scanned the sunset clouds anxiously, while Dolly nodded to the sun, as he hid his fiery face below the horizon, calling gaily, "Dood night, Mr. Sun; come early to-morrow."

And as though in obedienee to the childish command, the old Dutch clock had scarcely struck five the next morning, when the "king of day" pecped throngh the farm house windows, and wakened the trio with a loving kiss. And when, some hours later, Dave Van Riper drove up to the door with his country wagon filled with a merry load of little folks and big baskets, followed by another load of young people, Nat and Rose were all ready to join the party; and Dolly, in a blue sun-bonnet, was dancing up and down on the door-step.

"I hardly like to have that baby go," said Mrs. May; "she is too young to be trusted." But the children overruled her objections, and Rose promised to keep a faithful watch on the little one. So Miss Dolly was queen of the day, and rode off in state, waving her hand to Rover, the great shepherd dog, and her constant companion, who howled dismally at seeing his little friend depart without him.

Bear Hill was a wild woodland spot, about seven miles from the village, given up to the birds, bees, and butterflies, the animals from which it derived its name having

A PICNIC PARTY ON BEAR HILL.—*Drawn and Engraved for the American Agriculturist.*

disappeared many years ago, although old hunters still occasionally told stories of having seen the tracks of bears and foxes in that vicinity. But these tales were not generally believed, and Long Pond, a clear mountain lake on the summit of the hill, was a favorite fishing place for the boys of the village. There, too, blackberries grew in the greatest profusion, seeming larger and sweeter than anywhere else. Summer now reigned here supreme, and the sparrows and catbirds opened their eyes in amazement, this fair August morning, when Dave's laughing, singing, chattering crew drove up to the lonely spot, and in less time than it takes to tell, boys were climbing up to the tops of the tallest trees, boys were swinging on the limbs, extending far over the pond. An old boat at the water's edge was taken possession of by eager young fishermen; a hastily constructed swing sent happy lads and lassies flying through the air, while the older girls built a fire of dry brush, on which to boil the kettle, and Dave was glad to stretch himself out on the soft grass for a mid-day nap.

Nat baited the hook for Nellie Brown, and helped her catch enough perch and sun-fish to make a nice panful for dinner, while Rose and her companions stripped the bushes of their luscious fruit, to add to the woodland feast. And when the signal horn awakened the echoes, and summoned the party to the rural meal, what keen appetites they all brought with them! and how like a little sylvan goddess Dolly looked, crowned with oak leaves, seated at the head of the board. The ants crept into the bread, and the grasshoppers hopped on the butter, but they only seemed to add zest to the good things, if one may judge by the simple jokes and merry laughs that resounded on all sides.

"I saw a great big, black dog," remarked Dolly, suddenly, pausing with a cup of milk in one hand and a chicken bone in the other.—"Nonsense, child," said Rose, "there are no dogs in this wild place. You must have been asleep, and dreaming of Rover."

"He was bigger than Rover," said Dolly, "and I shall give him my doughnut," at the same time pocketing one of her mother's nice cakes. The children all laughed at what they called "Dolly's fancy," but just then Dave shouted, "Dinner is over, and time to start to blackberrying. All the children may scatter in different directions, and see who will pick most by nightfall."

Nothing loth, the children did as they were bid, and pails and baskets were soon heaped with the shining fruit, which all knew meant berry pies and puddings throughout the long cold winter. At first Dolly kept close beside Rose, trying hard to help, but the brambles pricked her fingers, and at last she stopped to pluck some daisies, singing to herself a gay little song; and Rose, who was interested in filling her basket before Ethel Linn, forgot her little sister, and when she finally remembered, the child was nowhere to be seen. "She has probably gone off with Nat," thought Rose, and continued adding to her store until the horn warned them that it was time to turn their faces homeward.

On reaching the rendezvous, her first words were, "Nat, where is Dolly?"—"I have not seen her since lunch," replied her brother, "I thought she followed you."—"Then she is lost!" exclaimed Rose, in agony, and all the children cried, "Oh! oh! oh!" like a Greek chorus.—"She can't be far off," said Dave, reassuringly, "but we must start immediately in pursuit."

Old and young, up and down they went, shouting, but no response. The shadows were lengthening on the hills, the weary birds were piping a sleepy 'good-night" to the flowers before tucking their tired heads under their wings, and still no sign of the missing Dolly.

"What shall I do?" cried poor Rose. "I can never go home and tell mother." And as Dolly's sweet little face, in its blue sun-bonnet, rose in memory before her, she threw herself on the ground and buried her face in the deep carpet of soft, green moss.

"Let us try once more," said Dave, who also began to look worried; and he and Nat, accompanied by some of the young men, started on a new trail, shouting at the extent of their healthy, lusty lungs. "Hark!" exclaimed Nat, at last, "I thought I heard a call."—"And I see something blue behind those trees, ' said one of the lads.—They listened, and in a moment more heard distinctly a sweet voice crying, "Natty, Natty, here I is. '

Away they all sped towards a green hollow, from whence the tones seemed to come, but stopped short at the sight that met their astonished eyes, for there sat the wee runaway, her soft flaxen hair blowing about her face, a great bunch of yellow-eyed daisies in her lap, and by her side a large black bear, calmly finishing the berries in her little tin pail. The animal growled as they approached, and showed a row of white teeth, but Dolly patted his head confidingly, saying, "Come and see my nice picnic doggie. He eated my doughnut, and then he eated all my berries."

"Oh, Nat, call her quick!" exclaimed Dave, bravely, and as the boy held out his arms, Dolly came dancing towards him. An instant later, a loud report sounded from Dave's gun. With a wild shriek, Bruin bounded into the air, and then lay quite still, and Dolly screamed, "You naughty Dave, to kill my dear black doggie."

The rest of the party, sitting sadly on the shore of Long Pond, heard the report, but the feelings of Rose can better be imagined than described when Nat returned, bearing Dolly in triumph, with the others in his train, dragging after them the berry-loving bear which they always supposed must have come down from the neighboring mountain in search of his favorite fruit.

The stars were twinkling in the summer sky when they reached home, and Mrs. May heard from the penitent Rose of her little daughter's marvellous escape. She refrained from blaming Rose too severely, but as she kissed the baby lips, her heart was overflowing with thankfulness, that Dolly would never go blackberrying again on Bear Hill with the "dear black doggie."

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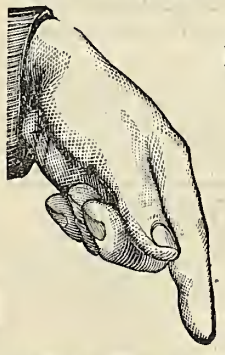

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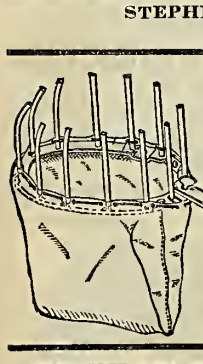
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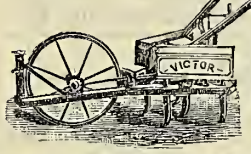

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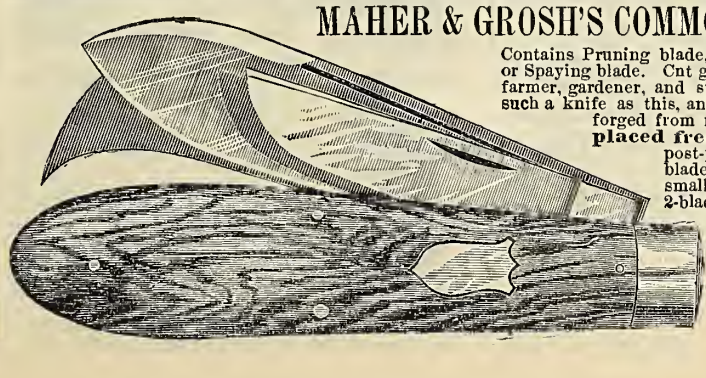
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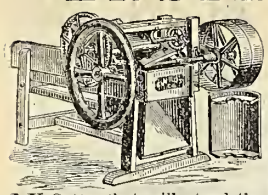
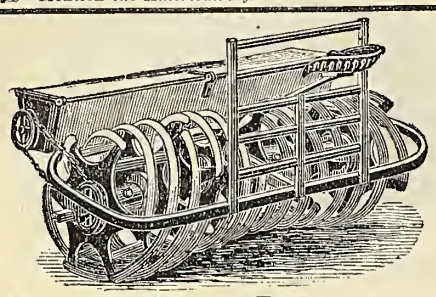


Ross Big Giant and Little Giant Cutters. "Specials" for Ensilage, Stock Raisers, etc. *Guaranteed* superior to every other. Immense Strength, Weight, and Capacity. Will cut 2 to 4 times as fast as any other; have the Ross Patent SAFETY FLY-WHEEL, EXTENSIBLE JOINTS, CONVEX GEARS, RING ROLLERS, etc. The **ONLY** Cutter that will stand the severe work and cut fast. Send for illustrated circulars and testimonials to

E. W. ROSS & CO., Fulton, N. Y.

☞ Mention the *American Agriculturist.*



Chicago Screw Pulverizer

Puts in Crops at Half the Cost of the Plow.

Over 100,000 Acres have been put into Crops by these Machines.

PAMPHLETS FREE--CUTS & LETTERS.

Address, **MAYWOOD CO.,**
Maywood, Ill.

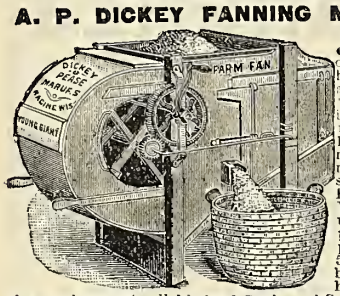
STRAW PRESERVING THRESHER.

Send for Illustrated and Descriptive Circular to

WHEELER & MELICK CO., Albany, N. Y.

THE CELEBRATED

A. P. DICKEY FANNING MILLS,



Have no equal. They obtained the highest award at the Centennial in 1876, and at Paris in 1878. These mills are made in nine sizes, for Farm and Ware-house use (hand or power). Capacity from 50 to 500 bushels per hour. They clean and separate all kinds of Grain and Seed for market; also **grade** them for **seeding.** They separate Oats and foul seed, such as Cockle, Smut, &c., from Wheat, Barley or Rye; and are specially adapted for cleaning, separating and grading Timothy, Clover, Red-Top, Flax, etc., and clean and **separate** three kinds of Beans at **one operation.** We also make the "Peerless Corn Sheller," **Cast Iron Field Rollers,** &c.

Address, **DICKEY & PEASE,** Manufacturers, **RACINE, Wisconsin.**

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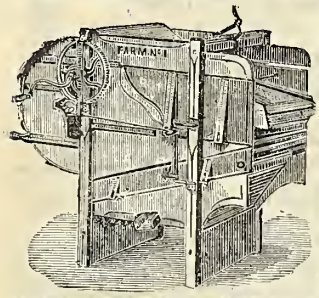

THE BEST MILL IN THE WORLD. It separates Oats, Cockle, and all foul stuff from Wheat. Is also a perfect cleaner of Flax, Timothy, Clover, and all kinds of seeds. The great improvement over other mills is that it has two shoes. It is especially adapted for warehouse use. *Send for Descriptive Circular and Price-List.* Liberal discount to dealers.

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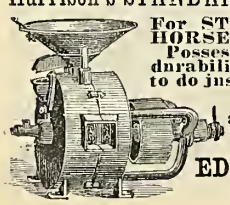
Harrison's STANDARD GRINDING MILLS!



For STEAM, WATER, WIND, HORSE, or HAND POWER. Possessing great capacity and durability. Every Mill warranted to do just what we claim for it.

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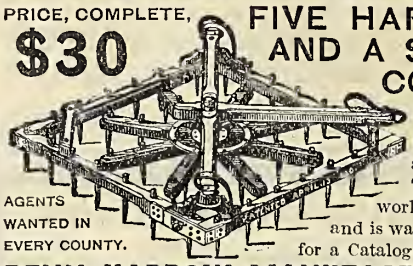
New Haven, Conn.

PENN HARROW BEST IN THE WORLD!

PRICE, COMPLETE, **$30**

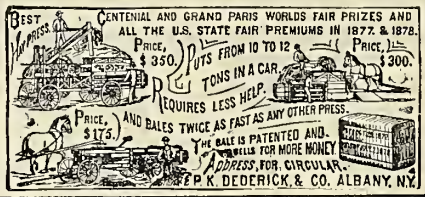


FIVE HARROWS, A CORN MARKER, AND A SLED FOR EACH HARROW, COMBINED IN ONE, WITHOUT ADDING AN EXTRA PIECE.

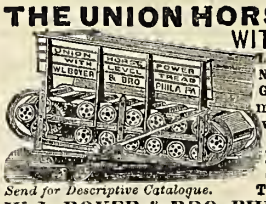
AGENTS WANTED IN EVERY COUNTY.

Made of the best white oak, with steel teeth, well painted, and in every way first-class. With our improvement it is **THE MOST CONVENIENT,** and will do double the work of any other Harrow and save the Farmer half his labor, and is warranted to do all we represent or money refunded. Send for a Catalogue and see what farmers say about it. Manufactured by

PENN HARROW MANUFACTURING CO. COOPER'S POINT, **CAMDEN, N. J.**



THE UNION HORSE-POWER WITH LEVEL TREAD



Largest track (7 in.) wheels. No Rods and Chilled Bearings Guaranteed to produce more power with less elevation than any other. Also manufacturers of the Premium Farm Grist Mill, CLIMAX FEED CUTTERS. Threshers, Cleaners, &c.

Send for Descriptive Catalogue.

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The Best in the World

— IS THE —

IMPROVED TRACTION ENGINE

With or without Reversing Gear. 10, 13 and 16 Horse Power. Built by

RUSSELL & CO., Massillon, O.

ITHACA Portable Engine.

STRONG, DURABLE, ECONOMICAL, SAFE.

Write for prices, addressing the Manufacturers,

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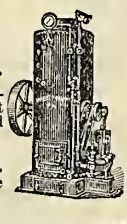
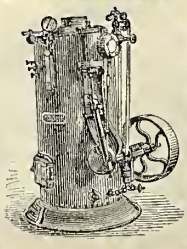
KRIEBEL'S Vibrating-Valve

STEAM ENGINES.



One-third less Machinery than others. Best Engine for farm and dairy purposes. Address,

West Point Engine and Machine Co., West Point, Pa.



Bookwalter Engine.

Especially adapted for Dairies, Creameries, and Farm purposes. Can by used for years without any repairs. Over 2,200 in actual use. Not one ever exploded. Can be run by any one of ordinary intelligence. Every Engine complete, ready to use as soon as received. No Engine built so good and so low in price.

3	Horse-Power....	$240.00
4½	" "	280.00
6½	" "	355.00
8½	" "	440.00

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JAMES LEFFEL & CO.,

110 Liberty St., New York City, or **Springfield, Ohio.**

This Plow contains the most remarkable improvements ever made in Swivel Plows. It is easy to handle, with **Shifting handles,** which enables the operator to walk with both feet in the furrow. The Hook or Latch is operated by the foot, so that the Plow is turned ready for use **without taking the hands from the handles.** Light to draw, firm, strong, and durable. Constructed of Patent Hard Metal, which is as strong and will scour equal to steel. We also make it of charcoal iron, at a less price.

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THE BELCHER & TAYLOR AGRICULTURAL TOOL CO., Chicopee Falls, Mass.

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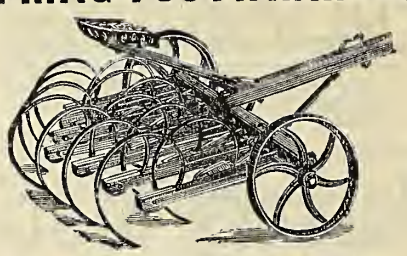
SPRING TOOTH HARROW



THREE MACHINES IN ONE,

and

EACH the BEST of its KIND.

Oil Tempered Spring Steel Teeth, every Tooth independent. The Teeth can be set so they will not turn over sods. Attractive in design, durable in all its parts, thorough in its work, easy in its operation and adjustments, and sold at a price within the means of ALL.

WHEELER & MELICK CO.,

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Also Manufacturers of La Dow's Jointed Pulverizing Smoothing Disk Harrow.

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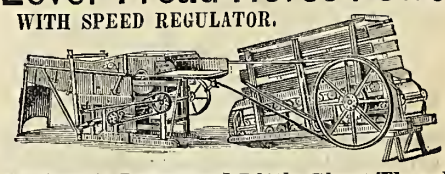
Level Tread Horse Power

WITH SPEED REGULATOR.



Heebner's Improved Little Giant Threshing Machine.

"Union" Feed Cutter, Circular and Drag Saw Machine, etc., Send for Catalogue. **Heebner & Sons,** Lansdale, Mont. Co., Pa.

GOOD MEN WANTED

everywhere willing to earn **$5** to **$10** per day, selling our new braided **Silver Monid White Wire Clothes-Line,** warranted to last a life-time. Pleases at sight. **Sells readily at almost every house.** Agents continually reporting grand success. **Counties reserved.** *Terms and Samples free.* Address,

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GRIND YOUR OWN BONE

Meal and Oyster Shells

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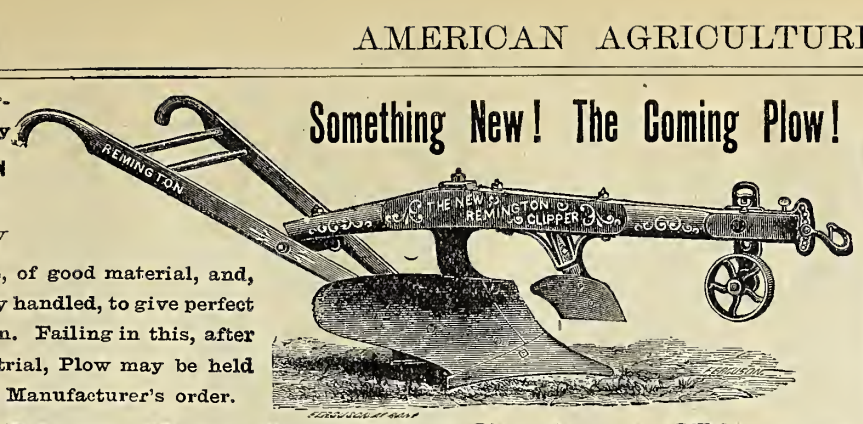
WILSON BROS., Easton, Pa.

We guarantee every **REMINGTON CARBON PLOW** well made, of good material, and, if properly handled, to give perfect satisfaction. Failing in this, after one day's trial, Plow may be held subject to Manufacturer's order.



Something New! The Coming Plow!

The New Remington Carbon Clipper

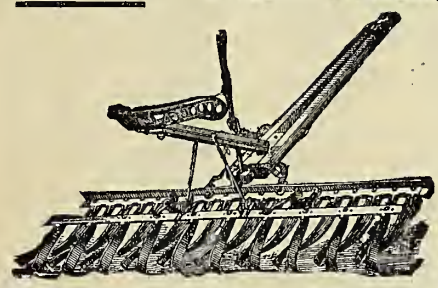
Enters upon its second year with a reputation never before achieved by any other Plow in a single season. Probably no manufacturer ever put out a Plow that from the start was so favorably received, or that was so perfect in its construction. Our first year's sales are unprecedented, both for the large number of Plows sold, and the uniform expressions of praise from every farmer who has used one. We claim for the New Remington Clipper:—Patent Carbon Metal—Improved Jointer with Steel Blade—Anti-Friction Landside—Changeable Shin—Perfection in Shape—The Lightest Weight—Easiest to Handle—Lightest Draft and Steadiest Running of any Plow in the Market. SEND FOR PRICES.

MANUFACTURED BY THE

REMINGTON AGRICULTURAL CO.,

BRANCH OFFICE, 57 Reade St., New York. **ILION, N. Y.**

"ACME" Pulverizing

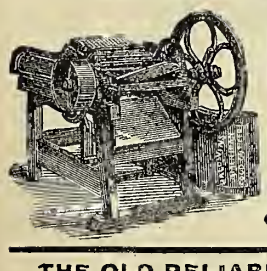


HARROW, CLOD CRUSHER AND LEVELER.

The **"ACME"** subjects the soil to the action of a **Crusher** and **Leveler,** and at the same time to the **Cutting, Lifting, Turning** process of double rows of **Steel Coulters,** the peculiar shape and arrangement of which gives **immense cutting power.** The **entire absence of Spikes or Spring Teeth** avoids pulling up and scattering of rubbish. It is **especially adapted** to inverted sod, hard clay and "slough land," where other Harrows utterly fail, and also works perfectly on light soil. Sent on trial to responsible farmers anywhere in the United States. Agents wanted. Send for circular.

NASH & BROTHER, Sole Manufacturers, HARRISBURG, Pa., and 22 COLLEGE PLACE, New York City.

BALDWIN'S IMPROVED ENSILAGE & FEED CUTTERS.
SIMPLEST AND BEST.
ONLY THREE FEED GEARS.



Thoroughly tested during the past three seasons for Cutting Ensilage and proved a grand success. And has been the leading Cutter for the past 15 years for Cutting all kinds of Dry and Green Feed. Power Cutters fitted with the only reliable Safety Balance Wheel. Send for Circular containing full description, prices, and testimonials.

C. PIERPONT & CO., Mfrs., New Haven, Conn.

THE OLD RELIABLE HALLADAY
STANDARD WIND MILL
27 YEARS IN USE.

GUARANTEED

Superior to any other make. 17 Sizes-1 to 40 H. Power Adopted by U.S. gov. at forts and garrisons and by all leading R. R. Cos. of this and other Countries. Also, the

Celebrated I X L Feed Mill.

which can be run by any power and is cheap, effective, and durable. Will grind any kind of small grain into feed at the rate of 6 to 25 bushels per hour, according to quality and size of mill used. Send for Catalogue and Price-List. Address

U. S. WIND ENGINE & PUMP CO., BATAVIA, ILL.

Business for Young Men.

WANTED—A limited number to learn Telegraphy at once. We will give a written guarantee to furnish good paying situations as soon as competent. Address with stamp **OBERLIN TELEGRAPH CO., Oberlin, O.**

Received Medal AND HIGHEST AWARD

OF MERIT AT CENTENNIAL.

Send for Catalogue.

STEAM ENGINES, SAWMILLS

A. B. FARQUHAR, York, Pa.,

Cheapest and best for all purposes—simple, strong, and durable. Also Horse Powers and Gin Gear.

SAW, GRIST AND COB MILLS, GINS, PRESSES AND MACHINERY generally. Inquiries promptly answered.

A specialty.

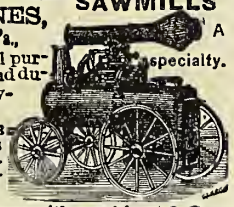


Fig. 1.

Vertical Engines, with or without wheels, very convenient, economical and complete in every detail, best and cheapest Vertical in the world. Fig. 1 is engine in use. Fig. 2 ready for road.

Believing that other makers

Fig. 2.

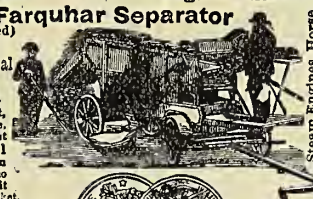
Send for Catalogue.

The Farquhar Separator

(Warranted)

Penna. Agricultural Works, York, Pa.

Lightest draft, most durable, simplest, most economical and perfect in use. Wastes no grain, cleans it ready for market.



Steam Engines, Horse Power and Threshers of all kinds. Also, Ploughs, Cultivators, &c., &c.

AND HIGHEST PRIZE AWARDED SEPARATORS,

THE SILVER MEDAL AT Paris Exposition.

Send for Illustrated Catalogue. *Address A. B. Farquhar, York, Pa.*

MEDAL MACHINES.

New York State Agricultural Works.

First Premiums at all Competitive Trials.

NEW SAFETY AGRICULTURAL STEAM ENGINES.

Railway, Chain and Lever Horse Powers, Threshers and Cleaners, Threshers and Shakers, Clover Hullers, Feed Cutters, Wheel Horse Rakes, Corn Cultivators, Horse Pitchforks, Shingle Machines, Straw Preserving Rye Threshers, Wheel Disc and Spring Tooth Harrows, Cider and Wine-Mills and Presses, Dog and Pony Powers, etc., etc.

WHEELER & MELICK CO., ALBANY, N. Y.

Send stamp for illustrated and descriptive circular,

ENGINES (*Traction & Portable*) for Farm, Saw Mill & Plantation. For prices, etc. write THE AULTMAN & TAYLOR CO. Mansfield, O.

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

Ants in a Lawn.—A correspondent at Osborne, Kansas, advises sinking glass tumblers, with perpendicular sides, in the soil near the ant-hills. He states that the ants fall into these traps in great numbers, and, being unable to get out, may be readily destroyed.

Devons or Jerseys.—"G. W. H.," Ohio. The Jerseys have been much better tested for butter than have the Devons, so no perfectly fair comparison of the two breeds as butter producers can be made. The milk of the Devons is rich in butter, and often very abundant, but the butter very pale. Thirty-quart cows occur occasionally, and yet we cannot find any accurate statement of the amount of butter which has been given by famous cows. Jerseys have been known to give over three pounds a day. The color of the butter varies greatly, but it is generally yellow, and of a firm and excellent quality.

The "Pussley" Question.—A subscriber, "J. M. H.," West Salem, Wis., writes us an interesting letter on Purslane or "Pussley." Having fought this weed for many years without being able to get ahead of it, it has occurred to him that a plant that so persists in growing, may have some useful qualities, indeed, may be more of a benefit than an injury. He asks if it does not derive most of its material for growth from the air, and if its benefits as a mulch, and the return of vegetable matter to the soil may not more than offset any injury it may do to the crops, especially as it only appears at midsummer, when the hoed crops are well established. These questions are of interest to nearly all cultivators, and we should be glad of any facts bearing on them.

Destroying Ants.—A correspondent in Dakota Terr., writes us that if kerosene be poured upon the nests, it will at once kill all the ants it touches, and that the rest will leave for other parts on short notice.

Trees in Dakota.—"M. W. P.," writes us from Sioux Falls, a most encouraging account of the trees that have been recently planted there. He regards the White Ash as the best suited for planting, as it is sure to live, grows rapidly, and makes a handsome tree. He says: "This prairie country is now looking finely with its groves, we are planting many fruit trees, as well as currants and other small fruits; the apple trees are full of fruit, notwithstanding some say that this is not a fruit country. Send your young men out here."

Hauling Wheat in Washington Territory.—"M. E.," Walla Walla, writes us; "I am now hauling my wheat, and find it lightens my labor very much, to fill my sacks only half full. I twist the upper end of each sack, and set the lower row mouth up. For the top course, I twist the end of each sack, and place it bottom side up. This saves labor in handling heavy sacks, and avoids the trouble of tieing or sewing them.

The Death of "Johnnie Cope" is reported; his age is not given, but his weight was 2,500 lbs. "Jobnnie" was a noted Clydesdale stallion, and extremely beautiful. We saw him several years ago in Illinois, when he weighed only 2,300 lbs. To see this enormous creature out at exercise and play, was a most remarkable display of horse-flesh. With his great size, he had all the playfulness of a young colt, and he capered about with a clumsy grace, most pleasing to behold.

State, County, and Other Fairs in 1882.

STATE FAIRS.

Am. Institute	New York	Sept. 27-Dec. 2
Alabama	Montgomery	Nov. 13-18
Arkansas	Little Rock	Oct. 16-21
California	Sacramento	Sept. 11-16
Canada, Central	Guelph	Oct. 3-4
Chicago Expos'n	Chicago, Ill.	Sept. 6-Oct. 21
Chicago	Chicago	Sept. 18-23
Cincinnati Ind. Ex	Cincinnati	Sept. 6-Oct. 7
Colorado	Denver	Sept. 1-30
Connecticut	Meriden	Sept. 19-22
Delaware	Dover	Sept. 25-30
Illinois	Peoria	Sept. 25-30
Illinois Fat Sto'k	Chicago	Nov. 16-23
Indiana	Indianapolis	Sept. 25-30
Iowa	Des Moines	Sept. 1- 8
Kansas	Topeka	Sept. 11-16
Kentucky	Lexington	Aug. 29-Sep. 2
Maine	Lewiston	Sept. 26-29
Mass. Hort'l	Boston	Sept. 19-22
Michigan	Jackson	Sept. 18-22
Minnesota	Rochester	Aug. 29-Sept. 2
Minn. Agl. & Mc'h	Minneapolis	Sept. 4- 9
Montana	Helena	Sept. 25-30
Nebraska	Omaha	Sept. 11-16
New England	Worcester, Mass.	Sept. 5- 8
New Jersey	Waverly	Sept. 18-22
New York	Utica	Sept. 25-29
North Carolina	Raleigh	Oct. 16-21
Ohio	Columbus	Aug. 28-Sept. 1
Oregon	Salem	Sept. 18-23
Penusylvania	Pittsburg	Sept. 7-21
Rhode Island	Cranston	Sept. 12-15
St. Louis	St. Louis, Mo.	Oct. 2- 7
South Carolina	Columbia	Nov. 14-17
Texas	Austin	Oct. 17-21
Tri-State, Ohio	Toledo	Sept. 11-16
Vermont	Burlington	Sept. 12-15
Virginia	Richmond	Oct. 25-27
Western Michigan, Grand Rapids		Sept. 25-30
West Virginia	Wheeling	Sept. 11-16
W. Va. Central	Clarksburg	Sept. 19-21
Wisconsin	Fond du Lac	Sept. 11-16

Other Important Fairs.

Industrial	Toronto, Ont.	Sept. 4- 6
Ontario Central	Hamilton, Ont.	Sept. 26
Permanent	Montreal, P. Q.	Sept. 14
Provincial	Kingston, Ont.	Sept. 18
Western	London, Ont.	Sept. 25-27

County Fairs.

MAINE.

Androscoggin	Auburn	Sept. 26-29
Arostook	Houlton	Oct. 6- 7
Cumberland	Presumpscot Park, Sp	Sept. 19-22
Franklin	Farmington	Oct. 10-12
Knox	Rockport	Oct. 3- 5
Knox	North Washington	Oct. 10-13
Lincoln	Damariscotta	Oct. 3- 5
Lincoln	Wiseasset	Oct. 3- 5
Oxford	Paris	Oct. 3- 5
Oxford West	Fryeburg	Oct. 10-12
Penobscot, West	Exeter	Sept. 26-27
Piscataquis Cent,	Foxeroft	Oct. 3- 5
Sagadahoc	Topsham	Oct. 10-12
Somerset	No fair this year.	
Somerset West	North Anson	Oct. 3- 4
Waldo & Penob't	Monroe	Oct. 4- 5
Waldo	Belfast	Oct. 3- 5

MASSACHUSETTS.

Amesbury & Salis'y	Amesbury	Sept. 21-22
Barnstable	Barnstable	Sept. 26-27
Berkshire	Pittsfield	Oct. 3- 5
Bristol	Taunton	Sept. 26-28
Deerfield Valley	Charlemont	Sept. 21-22
Essex	Haverhill	Sept. 26-27
Franklin	Greenfield	Sept. 28-29
Hampden	Holyoke	Sept. 26-28
Hampden, East	Palmer	Sept. 19-20
Hampshire, Fr'k-lin & Hampden	Northampton	Oct. 4- 6
Hampshire	Amherst	Sept. 21-22
Highland	Middlefield	Sept. 14-15
Hingham	Hingham	Sept. 12-13
Hoosac Valley	North Adams	Sept. 19-20
Housatonic	G't Barrington	Sept. 27-29
Marshfield	Marshfield	Sept. 13-15
Martha's Viney'd	W. Tishury	Oct. 3- 4
Middlesex	Concord	Sept. 26-28
Middlesex, North	Lowell	Sept. 26-27
Middlesex, South	Framingham	Sept. 19-20
Nantucket	Nantucket	Sept. 6- 7
Plymouth	Bridgewater	Sept. 20-22
Union	Blandford	Sept. 20-22
Worcester	Worcester	Sept. 5- 8
Worcester, South	Sturbridge	Sept. 14-15
Worcester, S. E.	Milford	Sept. 26-28
Worcester, North	Fitchburg	Sept. 26-27
Worcester, N. W.	Athol	Oct. 3- 4
Worcester, West.	Barre	Sept. 28-29

CONNECTICUT.

Chester	Chester	Sept. 28
Clinton	Clinton	Oct. 4
Danbury	Danbury	Oct. 2- 7
Fairfield	Norwalk	Sept. 12-15
Guilford	Guilford	Sept. 3- 7
Milford & Orange	Milford	Sept. 27-28
New London	Norwich	Sept. 26-28
New Milford	New Milford	Sept. 27-30
Pequabuck	Bristol	Sept. 27-28
Ridgefield	Ridgefield	Sept. 19-22
Simsbury	Simsbury	Oct. 3- 4
Tolland, East	Stafford Springs	Oct. 5- 6
Union	Falls Village	Sept. 12-13
Union (Munroe)	Huntington	Sept. 26-28
Watertown	Watertown	Sept. 26-28
Westbrook	Westbrook	Oct. 10
Windham	Brooklyn	Sept. 19-21
Woodbridge and Bethany	Woodbridge	Sept. 20-21
Woodbury	Woodbury	Sept. 13-14
Woodstock	Woodstock	Sept. 11-13

NEW HAMPSHIRE.

Carroll	No fair this year.	
Cheshire	Keene	Sept. 27-28
Hillsborough	No fair this year.	

VERMONT.

Rupert	West Rupert	Sept. 26-28
Windham	Newfane	Sept. 20-21
Windsor	Woodstock	Sept. 26-28

RHODE ISLAND.

Kent	No fair this year.	
Washington	West Kingston	Sept. 19-21
Woonsocket	Woonsocket	Sept. 19-21

NEW YORK.

Albany	No fair this year.	
Allegheny	Angelica	Oct. 3- 5
Broome	Whitney's Point	Sept. 5- 8
Carthage Union	Carthage	Sept. 5- 8
Cattaraugus	Little Valley	Sept. 11-14
Chautauqua	Jamestown	Sept. 5- 8
Chemung	Elmira	Sept. 19-21
Columbia	Chatham	Sept. 19-21
Columbia	Hudson	Sept. 26-28
Cortland	Cortland	Sept. 5- 7
Delaware	Delhi	Sept. 12-14
Duchess	Washington Hol.	Sept. 19-22
Erie	Hamburg	Sept. 26-29
Franklin	Malone	Sept. 26-28
Fulton	Johnstown	Sept. 5- 7
Genesee	Batavia	Sept. 14-16
Herkimer	Herkimer	Sept. 12-14
Jefferson	Watertown	Sept. 19-21
Lewis	Lowville	Sept. 12-15
Livingston	Geneseo	Oct. 3- 4
Montgomery	Fonda	Sept. 12-14
Oneida	Rome	Sept. 20-22
Onondaga	Syracuse	Oct. 3- 6
Ontario	Canandaigua	Oct. 3- 5
Orange	Middletown	Sept. 19-22
Orleans	Albion	Sept. 22-23
Oswego	Mexico	Sept. 12-14
Otsego	Cooperstown	Sept. 19-21
Putnam	Carmel	Sept. 19-21
Queens	Mineola	Sept. 26-28
Rensselaer	Troy	Sept. 5- 8
Rockland	Spring Valley	Sept. 26-28
St. Lawrence	Canton	Sept. 12-14
Saratoga	Ballston Spa	Sept. 12-15
Schenectady	Schenectady	Sept. 26-28
Schoharie	Schoharie	Sept. 19-21
Schuyler	Watkins	Oct. 4- 6
Seneca	Waterloo	Oct. 3- 5
So. Ulster Hort'l	Highland	Sept. 19-20
Steuben	Bath	Sept. 26-29
Suffolk	Riverhead	Oct. 3- 5
Sullivan	Monticello	Oct. 3- 5
Tioga	Owego	Sept. 12-14
Tompkins	Ithaca	Sept. 26-28
Ulster	No fair this year.	
Washington	Sandy Hill	Sept. 5- 8
Wayne	Lyons	Sept. 21-23
Westchester	No fair this year.	
Western N. Y.	Rochester	Sept. 19-22
Wyoming	Warsaw	Sept. 26-28

NEW JERSEY.

Bergen	Hohokus	Sept. 13
Burlington	Mt. Holly	Oct. 10-13
Cumberland	Bridgeton	Sept. 20-21
Glouceester	No fair this year.	
Hudson	No fair this year.	
Hunterdon	Flemington	Sept. 26-28
Mercer	No fair this year	
Morris	No fair this year.	
Somerset	Somerville	Oct. 3- 6
Sussex	Newton	Sept. 26-29
Union & Middle'x	Plainfield	Sept. 25-29
Warren	No fair this year.	

PENNSYLVANIA.

Adams	No fair this year.	
Armstrong	Kittanning	Sept. 12-15
Armstrong	Parker's Landing	Sep. 26-29
Beaver	Beaver	Oct. 26-29
Bedford	Bedford	Sept. 26-29
Berks	Reading	Sept. 26-29
Blair	Hallidaysburg	Sept. 25-28
Bradford	Towanda	Sept. 27-29
Bradford	Troy	Sept. 19-22
Bucks	Doylestown	Oct. 3- 6
Butler	Harmony	Sept. 19-21
Butler	Zellenople	Sept. 27-29
Cambria	No fair this year.	
Cameron	No fair this year.	
Carbon	Lehighton	Oct. 3- 6
Centre	No fair this year.	
Chartiers Valley	Canonsburg	Sept. 26-28
Chester	West Chester	Sept. 21-23
Chester	Oxford	Sept. 27-29
Columbia	Bloomsburg	Oct. 11-14
Connoquenessing Valley	Zelienople	Sept. 27-29
Crawford	Titusville	Sept. 19-21
Cumberland	Carlisle	Sept. 26-29
Dauphin	Harrisburg	Sept. 13-16
Dauphin	Gratz	Sept. 19-22
Delaware	Elwyn Station	Oct. 4- 7
Doylestown	Doylestown	Oct. 3- 6
Easton Far. & Mech. Institute		Sept. 12-15
Erie	Erie	Sept. 26-27
Fayette	Uniontown	Oct. 3- 5
Franklin	No fair this year.	
French Cr'k Valley	Cochranton	Sept. 13-15
Gratz Driving P'k	Gratz	Sept. 19-22
Greene	Jacksonville	Sept. 20-21
Harford	Harford	Sept. 27-28
Huntington	No fair this year.	
Indiana	Indiana	Oct. 3- 6
Jefferson	Brookville	Sept. 19-22
Jefferson	Punxsutawny	Sept. 26-29
Keystone & Buckeye	Sharon	Sept. 27-30
Lackawanna	Scranton	Sept. 26-29
Lancaster	No fair this year.	
Lawrence	Newcastle	Sept. 14-16
Lehanon	Lehanon	Oct. 4- 6
Lehigh	Allentown	Sept. 26-29
Luzerne	Wyoming	Sept. 12-15
Lycoming	Williamsport	Sept. 19-22
McKean	Port Allegheny	Sept. 19-22
Mercer	Stoneboro	Sept. 25-27
Mercer	Mercer	Sept. 6- 8
Mercer	Greenville	Sept. 20-22
Mercer	Sharon	Sept. 27-30
Mifflin	No fair this year.	
Monroe	No fair this year.	
Montgomery	Ambler Park	Sept. 26-29
Montour	Danville	Oct. 4- 7
Northern Montour	Washingtonville	Oct. 17-20
Nicholson	Nicholson	Sept. 7- 8
Northampton	Nazareth	Oct. 3- 6
Northampton	Easton	Sept. 12-15
Northumberland	Sunbury	Sept. 26-29
Oil Creek Valley	Titusville	Sept. 19-21
Oxford	Oxford	Sept. 27-29
Perry	No fair this year.	
Petroleum	Parker's Landing	Sep. 26-29
Potter	Coudersport	Sept. 26-28
Punxsutawny	Punxsutawny	Sept. 26-29
Ringtown	Ringtown	Sept. 19-22
Schuylkill	Orwigsburg	Oct. 3- 6
Schuylkill	Ringtown	Sept. 19-22
Shenango Valley	Greenville	Sept. 20-22
Sullivan	Dushore	Oct. 3- 5
Susquehanna	Montrose	Sept. 13-14
Susquehanna	Harford	Sept. 27-28
Tioga	Wellshoro	Sept. 20-23
Troy	Troy	Sept. 19-22
Union	Lewisburg	Oct. 4- 7
Venango	Franklin	Sept. 20-22
Warren	Sugar Grove	Sept. 12-14
Washington	Washington	Oct. 3- 6
Washington	Cannonsburg	Sept. 26-28
Washington	Burgettstown	Oct. 3- 6
Wayne	Honesdale	Sept. 26-28
Wellshoro	Wellshoro	Sept. 20-23
Wcstchester	Chester	Sept. 21-23
Western Penns'a.	Mereer	Sept. 6- 8
Wyoming	Tunkhannock	Sept. 20-22
Wyoming	Nicholson	Sept. 7- 8
York	York	Oct. 3- 6

ILLINOIS.

Adams	Camp Point	Sept. 4- 8
Boone	Belvidere	Sept. 4- 9
Brown	Mt. Sterling	Aug. 29-Sep. 1
Bureau	Princeton	Sept. 12-15
Calhoun	No fair this year.	
Carroll	Mt. Carroll	Sept. 12 15
Cass	Virginia	Sept. 12-15
Champaign	Champaign	Aug. 29-Sept. 1
Clay	No fair this year.	
Coles	Charleston	Sept. 20-23
Crawford	Robinson	Oct. 3- 6
Cumberland	Toledo	Sept. 6- 9
DeKalb	Sandwich	Sept. 11-15
DeKalb	Sycamore	Sept. 19-22
DeWitt	Clinton	Aug. 22-25
Douglas	Tuscola	Sept. 13-15
Edgar	Paris	Sept. 5- 8
Edwards	Albion	Oct. 3- 6
Effingham	Effingham	Sept. 26-29
Fayette	Vandalia	Sept. 21-23
Ford	Paxton	Aug. 29-Sept. 1
Franklin	Benton	Oct. 17-20
Fulton	Canton	Sept. 19-22
Fulton	Avon	Sept. 12-15
Gallatin	Shawneetown	Aug. 29-Sep. 1
Greene	Carrollton	Oct. 17-20
Hamilton	McLeansboro	Oct. 10-13
Hancock	Warsaw	Sept. 6- 9
Hardin	Elizabethtown	Sept. 27-30
Henderson	Biggsville	Sept. 12
Henry	Cambridge	Sept. 4- 8
Iroquois	Watseka	Aug. 14-18
Jackson	Carbondale	Oct. 9-13
Jackson	Murphyshoro	Sept. 27-30
Jasper	Newton	Sept. 19-22
Jersey	Jerseyville	Oct. 10-13
Jo Daviess	Galena	Sept. 5- 8
Jo Daviess	Warren	Sept. 13-16
Kankakee	Kankakee	Sept. 12
Kendall	Bristol	Sept. 5- 8
Knox	Knoxville	Sept. 4- 9
Lake	Waukegan	Sept. 25 30
LaSalle	No fair this year.	
Lawrence	No fair this year.	
Lee	No fair this year.	
Livingston	Pontiac	Aug. 29-Sept. 1
Livingston	Fairbury	Sept. 4- 7
Logan	Lincoln	Aug. 28-Sep. 2
Logan	Atlanta	Sept. 5- 8
Macon	Decatur	Sept. 5- 8
Macoupin	Carlinville	Sept. 5- 8
Marion	Centralia	Sept. 27-30
Marion	Salem	Sept. 26-29
Marshall	Lacon	Sept. 18-22
Marshall	Wenona	Sept. 18-22
Mason	Havana	Sept. 5- 9
Massac	Metropolis	Oct. 11-14
McDonough	Macomb	Aug. 28-Sept. 2
McHenry	Woodstock	Sept. 12-15
McHenry	Marengo	Sept. 19-22
Madison	No fair this year.	
Menard	No fair this year.	
Mereer	Aledo	Sept. 19-22
Monroe	No fair this year.	
Montgomery	Hillsboro	Sept. 26-29
Morgan	Jacksonville	Aug. 22-25
Moultrie	Sullivan	Sept. 26-29
Perry	Pinckneyville	Oct. 3 6
Piatt	Monticello	Aug. 14-18
Pike	Pittsfield	Sept. 26-29
Pope	Golconda	Oct. 4- 7
Putnam	No fair this year.	
Randolph	Chester	Oct. 17-20
Richland	Olney	Sept. 13-16
Rock Island	Port Byron	Sept. 6- 8
St. Clair	Belleville	Oct. 10-13
Saline	Eldorado	Sept. 19-23
Sangamon	Springfield	Sept. 18-23
Schuyler	Rushville	Sept. 29-21
Scott	No fair this year.	
Shelby	Shelhyville	Sept. 26-30
Stark	Wyoming	Sept. 11-15
Stark	Toulon	Sept. 19-22
Tazewell	Delavan	Sept. 18-22
Union	Jonesboro	Sept. 12-17
Union	Anna	Aug. 29-Sept. 1
Vermilion	Danville	Sept. 12-15
Vermilion	Hoopeston	Aug. 28-Sept. 1
Warren	Monmouth	Sept. 5- 8
Washington	No fair this year.	
Wayne	No fair this year.	
White	Carmi	Sept. 5- 9
Whiteside	Sterling	Sept. 12-15
Whiteside	Morrison	Sept. 5- 8
Whiteside	Albany	Aug. 23-25
Williamson	Marion	Sept. 26-29
Winnebago	Rockford	Sept. 11-15
Woodford	El Paso	Sept. 11-16

INDIANA.

Adams	No fair this year.	
Allen (N. Ind)	Fort Wayne	Sept. 25-29
Bartholomew	Columbus	Aug. 28-Sep. 2
Benton	No fair this year.	
Blackford	Hartford City	Sept. 12-15
Brown	No fair this year.	
Carroll	No fair this year.	
Cass	Logansport	Sept. 19-23
Clark	Charlestown	Sept. 12-15
Clay	Brazil	Sept. 4- 9
Clinton	Frankfort	Aug. 28-Sep. 1
Daviess	No fair this year.	
Dearborn	Lawrenceburgh	Aug. 22-26
Decatur	Greensburg	Aug. 22 26
Delaware	Muncie	Aug. 15-18
Elkhart	Goshen	Oct. 10-13
Fayette	Connersville	Sept. 6- 8
Floyd	No fair this year.	
Fountain	Covington	Sept. 19-22
Franklin	No fair this year.	
Fulton	Rochester	Sept. 27-30
Gibson	Princeton	Sept. 18-23
Grant	Marion	Sept. 12
Greene	Linton	Oct. 2- 7
Hamilton	Noblesville	Aug. 28-Sept. 1
Harrison	Corydon	Sept. 4- 9
Henry	Newcastle	Sept. 19-22
Howard	Kokomo	Sept. 5- 8
Huntington	Huntington	Sept. 19-22
Jackson	Brownstown	Aug. 22-25
Jasper	Rensselaer	Sept. 12-15
Johnson	Franklin	Sept. 19-23
Jay	Portland	Sept. 26
Jennings	North Vernon	Aug. 8-11
Johnson	No fair this year.	
Knox	Vincennes	Oct. 9-14
Kosciusko	Warsaw	Sept. 19-22
La Grange	La Grange	Sept. 27-29
Lake	Crown Point	Sept. 3- 6
Lawrence	Bedford	Sept. 13-16
La Porte	La Porte	Sept. 19-22
Madison	Anderson	Sept. 5- 8
Marshall	No fair this year.	
Martin	Loogootee	—
Miami	Peru	Sept. 12-17
Monroe	No fair this year.	
Montgomery	Crawfordsville	Sept. 11-16
Newton	Morocco	Sept. 5- 8
Noble	Ligonier	Oct. 11-14
Parke	Rockville	Aug. 21-26
Perry	Rome	Oct. 2- 7
Porter	Valparaiso	Sept. 27-29
Posey	New Harmony	Sept. 11-14
Pulaski	Winamac	Sept 20-23
Randolph	Winchester	Sept. 12-15
Ripley	Osgood	Aug. 15-18
Rush	Rushville	Sept. 12-15
Scott	No fair this year.	
Shelby	Shelbyville	Sept. 5- 9
Steuben	Angola	Oct. 10-13
St. Joseph	South Bend	Oct. 2- 7
Tippecanoe	Lafayette	Sept. 4- 9
Tipton	Tipton	Sept. 19-22
Vanderburgh	No fair this ycar.	
Vermillion	No fair this year.	
Vigo	Terre Haute	Sept. 11 15
Wabash	Wabash	Sept. 12-16
Warren	West Lebanon	Sept. 11-15
Washington	Salem	Aug. 29
Wayne	No fair this year.	
Wells	Bluffton	Sept. 19-22
White	No fair this year.	
Whitley	Columbia City	Sept. 19-22

IOWA.

Ageney City Dis't	Agency City	Oct. 3- 6
Allamakee	Waukon	Sept. 19-22
Appanoose	Centerville	Sept. 19-22
Boone Dist	Boone	Sept. 13-16
Bremer	Waverly	Sept. 19-22
Buchanan	Independence	Sept. 26-29
Buena Vista	No fair this year.	
Cass	Atlantic	Aug. 29-Sept. 1
Cedar	Tipton	Sept. 5- 7
Chickasaw	New Hampton	Sept. 26-29
Clarke	Osceola	Aug. 29-Sept. 1
Clayton	Farmersburg	Sept. 12-14
Clinton	DeWitt	Sept. 19-22
Crawford	Denison	Sept. 13-15
Creston Ag'l S'y.	Creston	Sept. 25-30
Dallas	Adel	Sept. 26-29
Davis	Bloomfield	Sept. 13-15
Decatur	Leon	Aug. 29-Sept. 1
Delaware	Manchester	Sept. 12-15
Des Moines	Burlington	Sept. 18-22
Dist. at Mechv'lle	Mechanicsville	Sept. 12-16
Dist. at Mt. Joy	Davenport	Sept. 12-15
Dubuque	No fair this year.	
Dunlap Dist	Dunlap	Sept. 20-22
Emmet	No fair this year.	
Fayette	West Union	Sept. 12-15
Floyd	Charles City	Aug. 29-Sept. 1
Grand River Dis.	Lineville	Sept. 19-22
Grundy	Grundy Center	Sept. 20-22
Guthrie	Guthrie Centre	Sept. 26-28
Hamilton	Webster City	Oct. 11-13
Hancock	Britt	Sept. 21-23
Hardin	Eldora	Sept. 12-15
Harrison	Mo. Valley	—
Henry	Mt. Pleasant	Sept. 19-22
Howard	Cresco	Sept. 6- 8
Humboldt	Humboldt	Sept. 20-22
Iowa	Marengo	Sept. 20-22
Inter-State	Hamburg	Sept. 18-23
Jackson	Maquoketa	Sept. 5- 8
Jasper	Newton	Aug. 19-22
Jefferson	Fairfield	Sept. 19-21
Jones	Monticello	Aug. 15-17
Keokuk	Sigourney	Aug. 22-25
Kossuth	Altona	Sept. 13-15
Lee	Donnelson	Sept. 12-15
Linn	Cedar Rapids	Aug. 28-31
Louisa	Wapello	Sept. 12-15
Lucas	Charlton	Sept. 20-22
Madison	Winterset	Aug. 28-31
Mahaska	Oskaloosa	Aug. 28-Sep. 1
Malcolm Dist.	Malcolm	Aug. 24-26
Maple River V. D.	Battle Creek	Sept. 19-20
Marion	Knoxville	Aug. 22-25
Marshall	Marshall'wn	Aug. 29-Sep. 1
Mitchell	Osage	Sept. 19-22
Monona	Onawa	Sept. 27-29
Monroe	Albia	Sept. 12-15
Montgomery	Red Oak	Sept. 18 23
Moulton Dist	Moulton	Sept. 26-29
Muscatine	Muscatine	Sept. 12-14
Osceola	Sibley	Sept. 15-16
Pocahontas	No fair this year.	
Polk	DesMoines	Sept. 1
Pottawattamie	Council Bluffs	Sept. 18-22
Powesheik Cen'l	Malcom	Sept. 26-28
Powesheik, New	Brooklyn	Sept. 20-22
Ringgold	Mt. Ayr	Sept. 26-29
Sac	—	—
Scott	Davenport	Aug. 28-Sept. 1
Shelby	Harlan	Sept. 21-22
Sioux	No fair this year.	
Strawberry Pt. Dis.	Strawberry	Sept. 19-22
Tama	Tama City	Sept. 12-14
Taylor	Bedford	Sept. 12-16
Traer Dis	Traer	Aug. 29-31
Union	Knoxville	Aug. 22-25
Union Dist	Afton	Sept. 20-22
Union Dist	La Porte City	Sept. 11-13
Union Dist	Wt. Liberty	Aug. 30-Sep. 1
Van Buren	Keosauqua	Sept. 12-15
Wayne	Corydon	Sept. 26-29
Webster	No fair this year.	
Winnebago	No fair this year.	
Winneshiek	Decorah	Sept. 12-15
Woodbury	Soulx City	Sept. 11-14

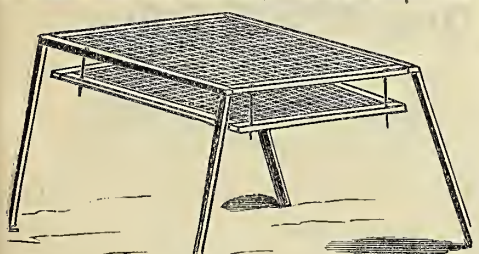
MICHIGAN.

Armada	Armada	Oct. 4- 6
Bay	Bay City	Sept. 20-22
Branch	Coldwater	Sept. 26-29
Cass	Cassopolis	Sept. 20-22
Clinton	St. Johns	Sept. 26-29
Calhoun	Marshall	Sept. 26-29
Eaton	Charlotte	Sept. 26-29
Grand Traverse	Traverse City	Sept. 12-15
Gratiot	Ithaca	Oct. 4- 6
Genesee	Flint	Oct. 3- 6
Hillsdale	Hillsdale	Oct. 3 6
Huron	Bad Axe	Oct. 4- 5
Ingham	Mason	Sept. 26-28
Ionia	Ionia	Oct. 3- 6
Jackson	No fair this year.	
Josco	Tawas City	—
Kalamazoo	No fair this year.	
Lenawee	Adrian	Sept. 26-29
Livingston	Howell	Sept. 26-28

Macomb	Richmond	Sept.	13-15
Mason	Ludington	Sept.	12-15
Montcalm	Stanton	Sept.	26-29
Manistee	Bear Lake	Oct.	4- 6
Monroe	Monroe	Sept.	19-22
Oakland	Pontiac	Oct.	3- 6
Oceana	Hart	Sept.	12-15
Ogemaw	No fair this year.		
Osceola	Evart	Oct.	4- 6
Otsego	Gaylord	Oct.	2- 7
Roscommon	No fair this year.		
St. Joseph	Centerville	Oct.	3- 6
Tuscola	Watrousville	Oct.	4- 6
VanBuren	Paw Paw	Oct.	10-13
Stoekbridge	Stockbridge	Oct.	10-12
Eaton Rapids	Eaton Rapids	Oct.	11-13
Union	Ovid	Oct.	10-13
St. Jo. Valley	Litchfield	Oct.	10-13
Plainwell	Plainwell	Oct.	3- 6
OHIO.			
Allen	Lima	Sept.	26-29
Ashland	No fair this year.		
Ashtabula	Jefferson	Sept.	26-29
Athens	Athens	Oct.	4- 6
Auglaize	Wapakoneta	Oct.	3- 6
Belmont	St. Clairsville	Sept.	6- 8
Brown	Georgetown	Oct.	3- 6
Butler	Hamilton	Oct.	2- 6
Carroll	Carrollton	Oct.	3- 5
Champaign	Urbana	Sept.	5- 8
Clarke	Springfield	Aug.	22-25
Clermont	Oweusville	Sept.	5- 8
Clinton	Wilmington	Aug.	15-18
Columbiana	New-Lisbon	Sept.	26-28
Coshocton	Coshocton	Oct.	10-13
Crawford	Bucyrus	Sept.	26-29
Cuyahoga	Chagrin Falls	Sept.	26-28
Darke	Greenville	Sept.	18-22
Defiance	Defiance	Sept.	25-29
Delaware	Delaware	Sept.	26-29
Erie	Sandusky	Sept.	19-22
Fairfield	Lancaster	Oct.	11-14
Fulton	Wauseon	Sept.	19-22
Gallia	Gallipolis	Sept.	13-16
Geauga	Burton	Sept.	11-14
Greene	Xenia	Sept.	7- 9
Guernsey	Washington	Sept.	27-29
Hamilton	Carthage	Sept.	26-29
Hancock	Findlay	Sept.	27-30
Hardin	Kenton	Oct.	4- 7
Harrison	Cadiz	Oct.	4- 6
Henry	No fair this year.		
Hocking	No fair this year.		
Huron	Norwalk	Sept.	26-29
Jackson	No fair this year.		
Jefferson	Smithfield	Sept.	27-29
Knox	No fair this year.		
Lake	Painesville	Sept.	26-29
Lawrence	Ironton	Sept	19-22
Licking	Newark	Oct.	3- 6
Logan	Bellefontaine	Sept.	26-29
Lorain	Elyria	Sept.	26-28
Marion	Marion	Oct.	3- 6
Medina	Medina Village	Sept.	13-15
Meigs	Rock Springs	——	
Mercer	Celina	Sept.	20-23
Miami	Troy	Oct.	3- 6
Monroe	Woodsfield	Sept.	27-29
Morgan	McConnellsville	Sept.	26
Morrow	Mt. Gilead	Oct.	11-13
Muskingum	Zanesville	Sept.	5- 8
Noble	Sarahsville	Sept.	27-29
Ottawa	Port Clinton	Oct.	4- 6
Perry	New Lexington	Sept.	27-29
Portage	Ravenna	Sept.	27-29
Preble	Eaton	Sept.	26-29
Putnam	Ottawa	Oct.	4- 7
Richland	Mansfield	Sept.	26-29
Ross	Chillicothe	Aug.	15- 8
Sandusky	Fremont	Sept.	26-29
Seneca	Tiffin	Sept.	26-29
Shelby	Sidney	Sept.	26-29
Stark	Canton	Sept.	26-29
Summit	Akron	Oct.	3- 6
Trumbull	Warren	Sept.	13-15
Tuscarawas	Canal Dover	Sept.	27-30
Union	Marysville	Oct.	3- 6
VanWert	VanWert	Sept.	27-30
Warren	Lebanon	Sept.	19-22
Washington	Marietta	Sept.	27-29
Wayne	No fair this year.		
Williams	Bryan	Sept.	26-28
Wood	Tontogany	Sept.	27-29
Wyandot	Upper Sandusky	Sept.	26-29
KANSAS.			
Brown	Hiawathia	Sept.	19-22
Butler	ElDorado	Sept.	4- 9
Cherokee	Columbus	Sept.	12-15
Cloud	Concordia	Oct.	5- 7
Coffey	Burlington	Sept.	19-22
Crawford	Girard	Sept.	27-29
Davis	Junction City	Oct.	4- 6
Dickinson	Abilene	Sept.	25-30
Ellis	Hays City	Sept.	27-30
Ellsworth	Ellsworth	Sept.	28-30
Franklin	Ottawa	Sept.	26-30
Greenwood	Eureka	Sept.	19-21
Harper	Anthony	Oct.	3- 5
Harvey	Newton	Aug.	30-31
Jefferson	Oskaloosa	Sept.	6- 8
Jefferson	Valley Falls	Aug.	28-Sep. 2
Jewell	Mankato	Sept.	6- 8
Johnson	Edgerton	Oct.	4- 6
Labette	Oswego	Sept.	12-15
Linn	LaCygne	Sept.	19-22
Linn	Mound City	Sept.	25-29
Marion	Peabody	Aug.	22-24
Marshall	Marysville	Aug.	29-Sept. 1
McPherson	McPherson	Aug.	29 31
Miami	Paola	Oct.	4- 7
Morris	Council Grove	Oct.	3- 6
Osage	Burlingame	Sept.	6- 8
Reno	Hutchinson	Sept.	7- 9
Riley	Manhattan	Aug.	2-Sept. 1
Sedgwiek	Wichita	Sept.	20-24
Sumner	Wellington	Aug.	30-Sept. 2
Woodson	Neosho Falls	Sept.	24-30
Western National	Bismarck	Sept.	18-23
MINNESOTA.			
Chippewa	Montevideo	Sept.	20-22
WISCONSIN.			
Brown	De Pere	Sept.	19-22
Calumet	Chilton	Sept.	26-29
Central Fair	Watertown	Sept.	25-30
Dane	Madison	Sept.	19-22
Dodge	Juneau	Sept.	18-21
Jefferson	Jefferson	Sept.	19-22
Lodi Union	Lodi	Sept.	26-28
Outagamie	Hortonville	Sept.	5- 7
Portage	Amherst	Sept.	19-20
Rock	Janesville	Oct.	3- 6
Racine	Burlington	Sept.	19-20
Walworth	——	Sept.	29-30
SOUTH CAROLINA.			
Anderson	Anderson	Oct.	18-20
Charleston	Charleston	Nov.	20-Dec. 16
Sumpter	Sumpter	Oct.	24-27
Union	Union	Oct.	24-26
KENTUCKY.			
Anderson	Lawrenceburg	Aug.	15-18
Bath	Sharpsburg	Aug.	15-18
Barren	Glasgow	Oct.	4- 7
Boone	No fair this year.		
Bourbon	Paris	Sept.	5- 9
Bullitt	No fair this year.		
Butler	No fair this year.		
Caldwell	No fair this year.		
Calloway	No fair this year.		
Carter	No fair this year.		
Clark	No fair this year.		
Daviess	Owensborough	Oct.	11-14
Fleming	No fair this year.		
Grant	No fair this year.		
Greene	No fair this year.		
Harrison	Cynthiana	Aug.	22-26
Hopkins	No fair this year.		
Jessamine	No fair this year.		
Laurel	No fair this year.		
Lewis	No fair this year.		
Lincoln	No fair this year.		
Lyon	No fair this year.		
Marion	No fair this year.		
Mead	No fair this year.		
Mercer	No fair this year.		
Metcalfe	No fair this year.		
Ohio	Hartford	Oct.	11-15
Oldham	No fair this year.		
Owen	Owenton	Oct.	3- 7
Pendleton	Falmouth	Sept.	9-12
Pulaski	No fair this year.		
Rowan	No fair this year.		
Scott	No fair this year.		
Taylor	No fair this year.		
Trigg	No fair this year.		
Washington	Springfield	Aug. 29-Sept. 1	
Webster	No fair this year.		
Woodford	No fair this year.		
MARYLAND.			
Carroll	No fair this year.		
Cecil	Elkton	Oct.	3- 6
Frederick	Frederick	Oct.	10-13
Harford	Bel Air	Oct.	10-13
Howard	No fair this year.		
Montgomery	Rockville	Oct.	18-20
Queen Anne	No fair this year.		
Washington	Hagerstown	Oct.	17-20
Wicomico	No fair this year.		
DELAWARE.			
Peninsula	Middletown	Sept.	19-21
MISSOURI.			
Carroll	No fair this year.		
St. Charles	No fair this year.		
VIRGINIA.			
Appomattox	No fair this year.		
Caroline	No fair this year.		
Chesterfield	No fair this year.		
Frederick	Winchester	Oct.	11-14
James City	No fair this year.		
Louisa	No fair this year.		
Shenandoah	No fair this year.		
Smyth	No fair this year.		
WEST VIRGINIA.			
Berkley	Martinsburg	Sept,	12-15

A Home-Made Fruit Dryer.

There are inquiries before us for the cheapest and best fruit dryer. There are several patented dryers in the market, some of which turn out a superior quality of dried fruit, but they are somewhat expensive, and not within the reach of those who have only a small amount of fruit that must be dried, without an outlay of money, or not at all. The accompanying engraving shows a form of dryer that is designed for in-door use, with the heat of a common stove. The size of the frame is determined by that of the stove, and may be made of 1½-inch material. The legs should be long cuough to support the frame well above the stove, and can be fastened on



with hinges, so as to fold up when not in use. The frame may be either covered with a net-work of coarse twine or fine wire—wire cloth is best but more expensive. A second frame may be suspended below the first one, thus doubling the amount of the drying surface.

Buckwheat.—In sowing Buckwheat, the stones ought to be picked off, and the land rolled, so that in harvesting the cradle may be swung as close as possible. The crop holds the ground so short a time, the surface does not become flattened and levelled by rains and other "degrading" influences, as it does when other grains occupy the soil. The crop is certainly sensitive to frost, and must be cut early, for, while much grain will probably be immature, this will all ripen if cut before frost destroys the juices of the plant. If cut close to the ground, then raked into gavels and set up, the tops being gathered to a point, and the butts spread out, it is secure. It should stand until dry enough to thrash, and ought to be thrashed at once. In handling, use a barley fork, so as to lift a whole gavel at a time, and spread sheets or a stack-cover over the hay-rack, to prevent loss.

A Use for Canes.—"W. G. B.," writes us, that on his plantation on the South Edisto River, S. C., there grows a great abundance of cane. This is six to eight feet high, and he wishes to know if it can not be utilized in some manufacture. There are two species of Cane in the Southern States, one of which grows 20 feet high, and the other not over 10 feet. We suppose that Mr. B. has the smaller kind. He suggests that it would be in demand at a fan factory, for handles to fans. We know of no such factory, fans being imported from countries where labor is much cheaper than with us. A number of years ago the larger kind of cane was converted into paper pulp, by blowing it from a steam gun. Whether with the improved methods of making paper stock from wood, this method of using canes is still employed, we can not say, but that is the only use we can suggest for the smaller species of cane.

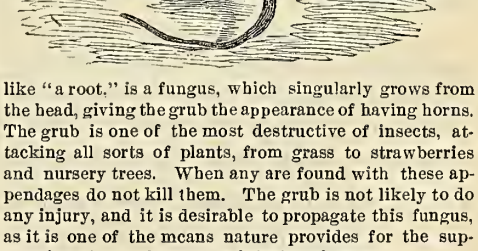
Velvet Grass.—"What do you think of it?" asks a correspondent. We might answer that it was a beautiful nuisance, but that would not cover the whole ground. The Velvet Grass (*Holcus lunatus*) is sure to attract attention from its peculiar gray color and soft, velvety feel. As a meadow or pasture grass it is nearly worthless, as cattle care nothing for it. Still this grass has its uses. It will grow where other grasses will not get a foothold, and a crop of it plowed under will prepare the land for better grasses and afterwards for Clover. We refer "D. H. B." to an article in July, 1871, p. 266.

Liquid Manure Tanks.—David Whipple, Somerset Co., Me. Your best plan would no doubt be to conduct the urine of your cattle and horses, by a gutter behind them to the tank. This gutter should be wide enough to shovel out conveniently. The place for the tank is under or near the manure heap, and if possible, this should be under cover. The tank may be made of wood, stone, or brick, the floor of stone laid in cement, but if of wood the tank should be packed upon the outside with clay, moistened, and well rammed down. A pump should stand in the tank, which will lift the water as high as the manure will ever reach. There should also be a spout arranged for conducting other water into the tank, from the eaves or elsewhere. The best use liquid manure can be put to, is to keep up a regular fermentation in the manure and compost heaps, and not to let it get too active. Manure is in this way greatly improved, and the liquid being absorbed, it is not lost to the soil. It may also be applied, diluted with much water, by a sprinkling or distributing cart, and in this way it especially benefits all kinds of grass.

Morgan Horses.—In answer to an inquiry for Morgan Horses, coming from "H. F. J.," Lane Co., Oregon. About the beginning of the present century, there lived a man in Vermont by the name of Justin Morgan, and he had an excellent horse. How good he was, nobody knew until after both horse and man were dead. Then it was discovered that there was a remarkable similarity in the get of this horse and the get of his sons, a large number of which were kept as stock horses. That part of Vermont, and so of other parts of New England, where there were a good many of his get, fairly grew rich by the sale of "Morgan" horses, of the third and fourth generation. People who knew no better, called the Morgans a *breed*, but they were only a *family*, not even a *tribe*. There was of all things no breeding about them—all sorts of mares bore progeny to the Morgan horses, and among this miscellaneous lot of descendants, there were some which started "families" of some distinction, and of distinctive characteristics, on their own accounts. Prominent among these sub-families is that of the "Black Hawks." Now they are all pretty much lost. They had their day; and now and then we know of a Morgan with some of the old fire and go, and tirelessness in him, but they are few. The blood exists, but it is getting thin, and even their admirers (and who did not admire them in their day,) admit that the Morgans are no more.

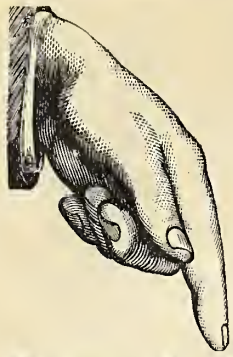
The Japan Persimmon.—"A.," Paint Lick, Ky. It is probable that this would succeed in your State. It is almost hardy in the climate of New York City. We have tried it twice within a few miles of the City, but it has been killed in severe winters. Once, within our knowledge, it survived in a garden in the City long enough to bear fruit, but was killed soon after. It succeeds finely in Georgia and, we think, in Virginia. The fruit is so excellent, so unlike any other, that it is worthy of trial, wherever there is a probability of success.

Worm with a Root Growing from it.—"W. S. R.," Kans. Your "Natural Curiosity," is one we are glad to see. Several years ago we had the same from Missouri, and gave a figure of it, which we here reproduce. The "worm" is the "White Grub," the larva of the May-bug or June-bug. That which appears



like "a root," is a fungus, which singularly grows from the head, giving the grub the appearance of having horns. The grub is one of the most destructive of insects, attacking all sorts of plants, from grass to strawberries and nursery trees. When any are found with these appendages do not kill them. The grub is not likely to do any injury, and it is desirable to propagate this fungus, as it is one of the means nature provides for the suppression of one of our most injurious insects.

Cattle Poisoned by Paint.—F. Alden, Allegheny Co., Pa., writes us that three full-blooded Jerseys were recently poisoned by licking newly-painted fences, and asks us to give a word of caution. We have known cows who gained access to paint in kegs to be fatally poisoned. Cattle often have a morbid appetite, and there is apparently something attractive to them in the oil mixed with the paint. We agree with our correspondent that the danger should be generally known.



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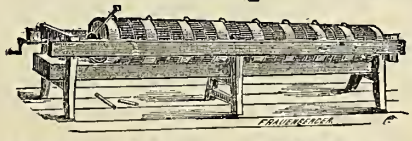

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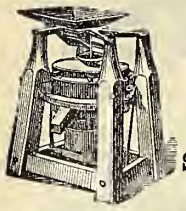

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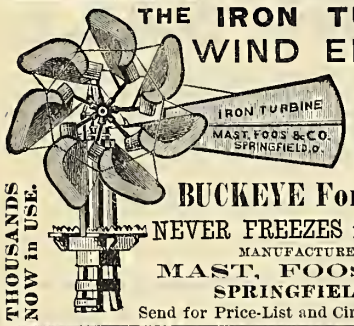

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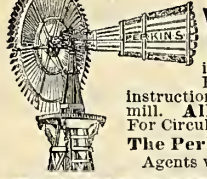

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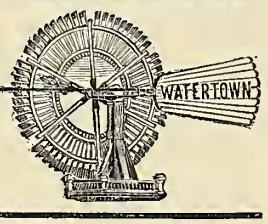

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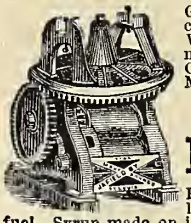

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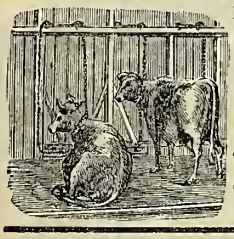

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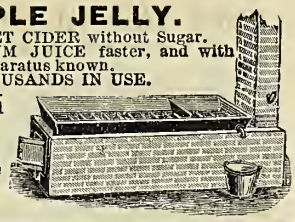

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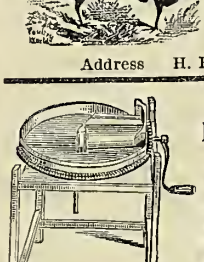

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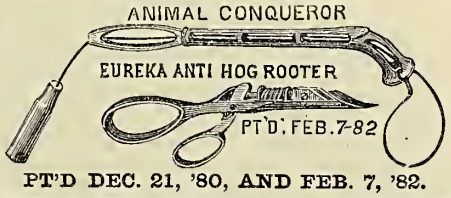

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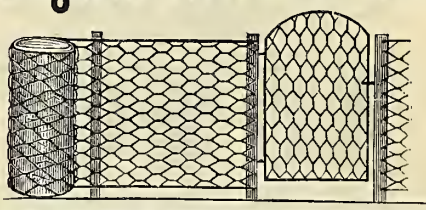

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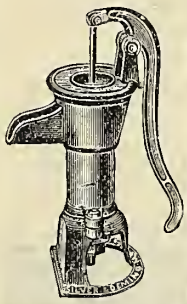

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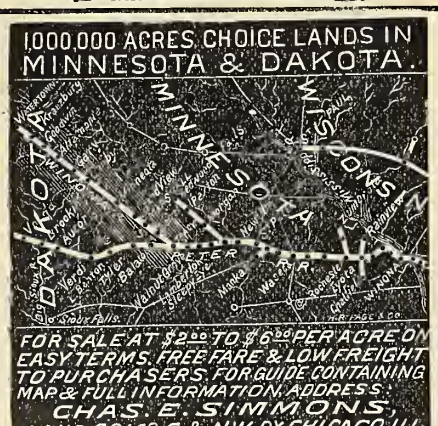

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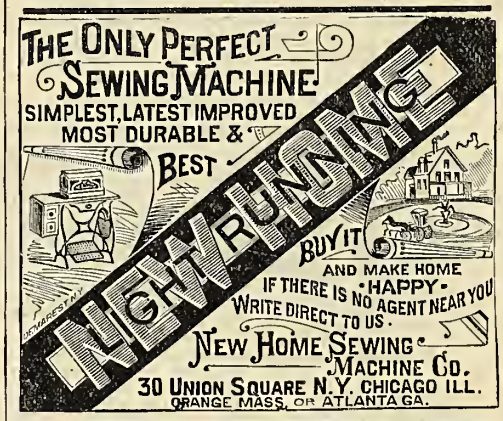

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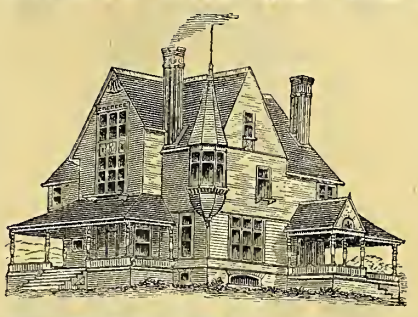

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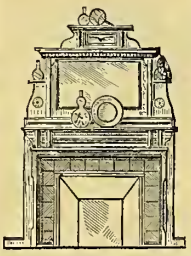

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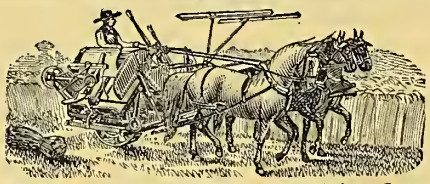

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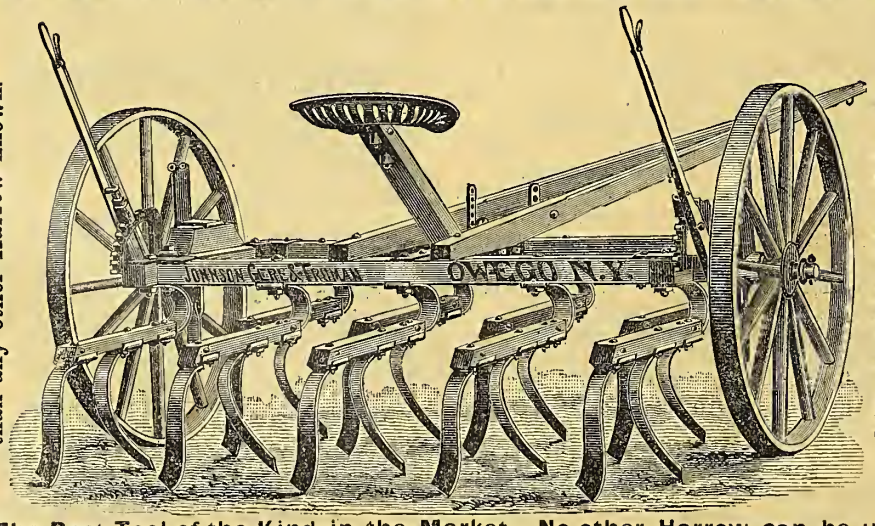

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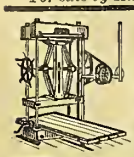

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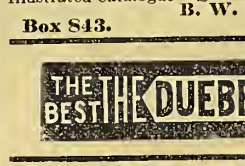

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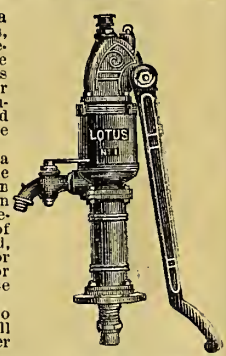

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VOLUME XLI.—No. 10. NEW YORK, OCTOBER, 1882. NEW SERIES—No. 429.

AUTUMN REVERIES.—*Drawn and Engraved for the American Agriculturist.*

'Tis the golden time of all the year, the mellow month, when the "nut brown maid," October, bids the farmer gather in his bounteous store, and gently trips along with dancing feet, casting her shimmering veil of hazy blue o'er all the land, thus adding a fresh and wondrous charm to every smiling hill and vale. The sun shines upon the arid meadows, now bereft of all their glory—there, with a Crœsus finger turning the maples to purest gold, and here, creeping through the interlacing boughs to kiss a sweet-faced maiden—wrapt in an autumn revery. There is a dreamy look in her downcast eyes as she recalls vanished pleasures, while she idly toys with the vine leaves in her lap. The falling leaves flutter about her in an amber shower; the soft breeze bears upon its wings the dying breath of hundreds of fading flowers, the birds in their Southern flight circle languidly above her head—even her faithful watch dog stands—patiently awaiting his mistress' pleasure. The world seems at peace, and happily the maiden dreams on. She makes a pretty picture as she reclines on the fallen log, gathering together these flowers of remembrance—to weave with the beauteous garland of fancy, where, as life's mellow autumn steals on, they may be embalmed in memory forever and evermore.

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AMERICAN AGRICULTURIST.

NEW YORK, OCTOBER, 1882.

Suggestions for the Season.

Visiting Good Farms.

The many fairs that are being held in various sections of the country are doing much towards advancing a far more enlightened agriculture. We have already pointed out some of the advantages to be gained by a careful study of the exhibits, and the importance of taking an active part in these fairs. Another suggestion to the same end is here offered, which, if acted upon, will supplement the work of the fairs and do much good to all progressive farmers. It is a duty of every farmer to visit yearly some of the best farms in the county, and there gather practical lessons in improved agriculture. There is no method of learning about any farm subject equal to being on the farm where it is practised, and having it explained by the one who has made it a success. It may be the way of feeding stock, or a plan of preserving roots, ensilage, or other fodder. A farmer may contemplate a system of underdrains for his wet fields, in this case it would be best to make a visit to some farmer who has thus drained his farm, and gain from him many valuable hints and suggestions in this important work. Such visits not only give new ideas, but are a wholesome recreation, and many a farmer who at the first thought may say, "I can not afford it!" will find by experience that he has spoken too soon. Take a day to go and visit some one of the best farms in the county, and this will open the way for further visits and a wider knowledge of the best methods of farming.

Digging Swamp Muck.

The present month is a good time to get out a supply of swamp muck. It is impossible to answer the question as to the exact value of this material as applied to land. The quality of muck varies greatly, some of it not being worth the expense of removing it from the beds, even when this can be done with ease. The fertilizing value of most mucks depends largely upon the nitrogen they contain, and that this element may be available, the muck needs to undergo a process of decomposition. The nitrogen must be liberated from its insoluble organic compounds, and form soluble substances, as the nitrates, and ammonia compounds. To secure this, muck should be either placed in a heap and subjected to the influence of freezing and thawing—weathering as it is termed, or be mixed with manure in a compost heap, and there undergo a decomposition, to fit it for use as a fertilizer. At this season the muck beds are usually filled with water, but by beginning at one side, a boat or scow may be used to advantage.

A Review of the Year.

As the more active portion of the year draws to a close, it is well for the farmer to look back over the busy months just past and draw some lessons from the season. This is not only a pleasure, but a duty, and all the more the duty when there is little or no pleasure in such a retrospect. It may be that some of the crops have failed, and it should be the work of the more quiet months of late fall and winter to find out the causes of these failures, and take all possible measures to prevent their recurrence. As an example it may be that the field of wheat yielded only half a crop, and was therefore without profit. This may have been the effect of one or more causes. Was the soil too poor? A good crop of wheat does not grow upon land that is lacking in the materials upon which plants must feed. There must be a supply of potash and phosphoric acid, and especially of nitrogen in an available form — in short, a soil to be fertile must abound in those materials which are removed in a crop, and may be returned again in the manure that is made from such crops. If the crop was poor, in many cases manuring or otherwise enriching the soil will insure a yield for the coming year. But richness is not everything, and the farmer may see his crop fail on a soil that has enough of the various ingredients of plant growth. The mechanical texture of the soil may be at fault. A wet soil is not a productive one. Agricultural plants cannot do well in earth when the roots are surrounded by water, but by draining, wet, cold land often becomes very productive.

Again, on soil rich and mellow, the partial or entire failure of the crop may be in the seed, or the sowing, or both. The value of good seed is beyond question, and only the best should be used. There is a great difference in varieties, and a superior sort is cheapest at any cost. The farmer may judge of the quality of his seed by noting what his neighbors use, and the crops they get under similar conditions, when his own fields have not given good returns. Furthermore, a test may be made by sowing different varieties side by side. We do not advocate testing many sorts, but do enough of this experimental work to keep abreast with the progress in the improvement of varieties. There are failures due to the ravages of insects, or to conditions of climate prevailing for the season. If insects have been destructive, it is important to become acquainted with their habits, that any and all means may be taken to meet them.

In short, farming, as now profitably pursued, needs constant study, and during the comparative leisure of the winter, every one should review the past, and plan for better results in the future.

Late Sowing of Wheat.

On a rich soil, winter wheat may be sown with good results up to the middle of October in many localities. The main point is to have the plants well rooted before freezing sets in. The time of putting in grain may be regulated somewhat by the character of the seed bed, its richness, mellowness and depth of culture. Late sowing has this in its favor, that it helps to escape the ravages of the Hessian fly which often is very destructive to early sown wheat. Any quick acting manure is of special value on wheat sown this month, as it stimulates the young plants at once to a rapid growth. Thus any salt of ammonia or nitric acid, as sulphate of ammonia, or nitrate of soda, furnishes valuable nitrogen at once, and 150 lbs. of either of these salts per acre may double the crop.

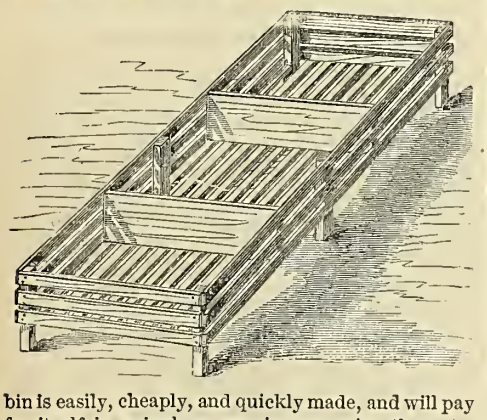
Will it Pay to Steam Fodder?

Taking the word fodder in its broadest sense, as any kind of food for graminivorous animals, we may say that it will always pay to steam or cook feed for swine, and often for cows in stables containing 25 head or more, while for sheep and horses it will be of doubtful expediency, and usually not advisable under any circumstances. The cooking of feed for fattening swine is so important as a matter of economy, that it will pay, even though done with little regard to the saving of labor and fuel. On the other hand, to cook the feed for neat cattle with profit, not only should there be animals enough to make it pay, but the rations should be so carefully planned, that by mingling of palatable, with less relished and coarse fodder, a saving may be effected in that way. Besides the object for which the cattle are kept, is an important factor to be considered in the feeding.

The flow of milk is increased by steaming the fodder—the color of the butter is, however, injured. The same ration will prove more fattening, while, at the same time, there will be little or no waste, if the steaming is well managed. It is best to have the steamed ration composed of a variety of feed, such as corn-fodder, roots, hay or oat straw, with bran and corn-meal, or cotton-seed, or linseed-cake, or meal. The substitution of one kind of fodder or meal for another, gives variety and relish. The coarse fodder is cooked soft, and the flavor of the roots and of the meal pervades the mass. It is not likely that any of the small agricultural steamers can be made to economically cook the food for as many as 25 or 30 head of cattle. When a boiler of several horse-power is employed to do other work, as pumping, thrashing, sawing wood, grinding, cutting hay and corn fodder, etc., steam may be economically used for cooking fodder. Of this there can be little doubt. The steam-box in which the fodder is placed for cooking, if it is big enough, need not be filled oftener than twice a week, and if, as already intimated, every pains is taken in the operation to save in the items of labor and fuel, steaming fodder for cattle will be found profitable.

A Bin for Potatoes.

Potatoes do not keep well upon a cellar floor, where there is more or less dampness, and an imperfect ventilation. It is much better to store them in bins like the one shown in the engraving. This is made of strips, both for the bottom and sides, with spaces between them, and being raised upon legs, thorough ventilation is secured. Cross-boards may be put in to separate varieties. Such a



bin is easily, cheaply, and quickly made, and will pay for itself in a single season, in preserving the potatoes. When there is a large quantity of potatoes to be stored, three or four of these bins may be placed one above the other, the lower ones not being full, in order to secure the desired ventilation.

Slobbering Horses.

Some horses will slobber nearly all they eat; others when they eat certain plants, usually in early summer, and others are never known to do so. Horses thus affected, will, when their diet is much restricted, sometimes cease the habit. Clean timothy, and red-top hay, and clean oats fed in the straw (clean meaning free from weeds or other plants,) will usually cause a confirmed case of slobbering to stop temporarily. A little clover, clover-hay, rag-weed in the oats, and many other weeds, are liable to start it again, in fact, will be quite sure to do so. Thus it is clear that the tendency is constitutional in the animal, that a cause that would excite slobbering in one animal, will not affect another, and that it is excited by different plants which the horse uses for food, either in the green or dry state. Besides, the habit is said to come from partial paralysis of the nerves of the face, or of one side of the face. Usually, however, it comes from some article of food, and it is more often caused by the second growth clover, than anything else. Veterinarians have recommended astringents to be employed in solution, the mouth being washed with a decoction of Oak-bark, Witchhazel, Alum, etc., but no permanent benefit comes from these applications. Partial relief has been experienced, by confining the horse to a diet of clover, as this excites the salivary secretion most violently. After a few days a return is made to different food, with the hope that this sudden change would stop the excessive secretion of saliva, which it almost always does for a while.

When to Apply Manure.

The common practice is to cart the manure from the barn-yard once a year, usually in the spring. In this way the hauling is done when other work is pressing, and while the ground is soft. It is better to draw out the manure exposed in open yards, as it accumulates, and drop it in heaps in the fields where it is to be used. With the best facilities for keeping the manure—that is, with a barn-cellar—there is less loss in keeping it under cover, and when well rotted, apply it to the ground just at the time when it will be of the most benefit to the crop. Manure is considered as so much capital used in growing the crop, and bears interest only as it is used by the plants. If beets or turnips need the most manure in midsummer, it is economy to apply it then, provided there is the proper facility for making, storing, and turning out this valuable fertilizer every month in the year. Grass lands can make use of manure at nearly all times, and upon these it may be spread in winter with economy of labor and excellent results.

Notes on Corn and Fodder Corn.

Corn, over a large part of the country, is late in ripening, and though we should take no risk of its being touched by frost before cutting up, yet many will take it. Simply cutting, however, before the frost will save the fodder, even though it be cut after sun down of the night of a heavy frost. The full moon in September ought to see the corn all cut and stooked, over a large part of the country.

Husking.—There is no farm work in the doing of which there is so much difference in men as in this. One man will husk two bushels while another is husking one. Employ good huskers, and pay them by the bushel, if possible. See personally that the bundles of stalks are well bound and stooked, if they are to be left in the field.

Seed Corn should be saved while husking, if not before. Take one perfect ear from stalks bearing two or more, throwing it to one side with the husk attached. A perfect ear has all rows perfect, a small butt end, the cob well tipped out with grain and covered with husks, the kernel uniform and well ripened.

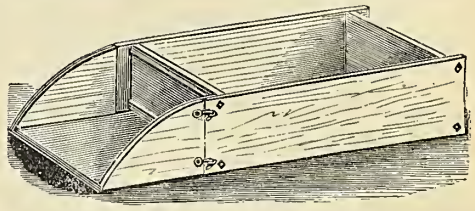
Corn Cribs.—It is best, of course, to have rat-proof cribs, but "rail pen" cribs are just as good for the corn, if well covered with boards or a straw roof. Chickens and turkeys will steal a little, and rats and squirrels have a fine chance at it, but what the poultry take is not lost, and the vermin can be kept down by cats and terriers.

The price of corn is likely to rule high, and it is certainly worth while to prevent all loss of this valuable food by unusual care.

Fodder Corn.—Though ensiloing may take place at any time before frost, the successful curing of corn fodder can only be done after the nights are cool, if not cold. It should stand until about the time of the first frosts before cutting, and, after partly curing, should be put in bundles and large stooks, to remain until the ground freezes.

Wagon Box for Corn.

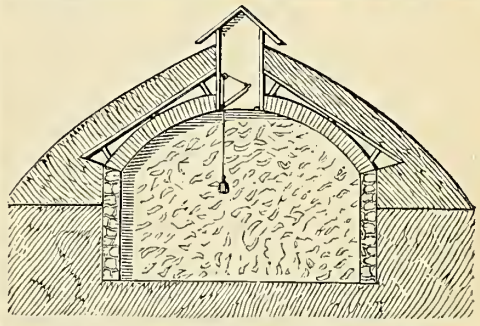
We have published a number of plans of wagon boxes, arranged for shovelling corn. One has an at-



tachment which is fastened to the sides of the wagon box by hooks, as shown in the engraving. When attached to the loaded wagon, the tail-board may be removed, and a space is provided for using the scoop or shovel. Such an attachment may serve for any number of wagons, is easily made, and, when not in use, may be removed and put away.

A Frost Proof Cellar.

A good cellar for storing roots, etc., that is frost proof in winter, and cool in summer, may be con-



structed as follows: The ground should be excavated for four feet, and walls of stone built, with an arching of brick to cover the whole. An air space is left between the bricks and the earth above them. This is made by laying scantling lengthwise of the roof, and covering them with boards or plank well battened. This secures a non-conducting air space, which prevents the passage of moisture from the outside. A ventilator in each gable end of the cellar, provides for a circulation of air, and the escape of any moisture that might otherwise collect on the surface of the boards. There should be a sash or trap door in the ventilator shaft, that may be opened or closed by means of a cord and weight, which hang down in the cellar. In hot summer weather it may be necessary to provide some shade over the ventilators. A cross section of such a cellar is shown in the engraving.

Good Water for the Stock.

Pure water and an abundance of it is one of the essentials of every good farm. This water should be at or near the barn or barns. During the summer months when the farm stock is in the pastures with green fodder, the water supply does not seem to be of so great importance. A good stream may be all that is necessary, even if it is situated a half mile from the farm buildings; but in winter a supply close at hand is of great value. Barn-yard wells are convenient but are seldom receptacles of pure water. The water too frequently would serve a better purpose if used as a fertilizer upon the land than given to the animals. Far superior to the well water is that of some spring which is brought to various places in and around the farm buildings from a neighboring hill side. There are very many places where pipes can be laid and the very best of water brought in to supply the wants of the stock

There is a great loss sustained by farmers in giving, or allowing their stock to seek and drink water that is at the point of freezing. It not only chills the system, but requires a large amount of food to bring it to blood heat. Spring water though cool, is not ice cold. Before the winter sets in, and the stock are all in their quarters, every one should see that his water supply is what it should be for the sake of the comfort and health of his animals, and the profit which comes with such thoughtfulness.

Repair the Farm Buildings.

This is not so good a time as the month of May for the repair of the barns and the other out-buildings, but it is better to do all the necessary "fixing up" before winter sets in. There are many things that only need to be done in the fall, such as making the division fences and gates for the flocks of sheep, the young stock, etc.; in short, do all those things that may be called labors of preparation, for the incoming or housing of the stock before the day comes for them to go into their places for the winter. It is much easier to repair a floor or manger of the stable before the animals have come to their stalls. It may be that a shed will be needed and it should be built now. The same may be said of an ice house. Prepare early and prepare well for the severe months of the coming winter.

Late Sown Rye for Spring Fodder.

There are differences of opinion as to the value of late sown rye as a crop for early spring feeding. These differences are almost entirely due to the circumstances of soil and season. Should the soil be poor the rye crop, like any other, will be poor, and should the season close in with hard freezing soon after sowing, the plants will not have made sufficient roots to save them from injury. If, on the other hand, the soil is rich and mellow, and the sowing is done so early that strong, well rooted plants may form, then a profitable crop may be expected. The writer has seen most satisfactory results obtained by plowing under a sod—previously well manured—in late autumn, and the ground sown to rye. In the spring this field yielded a heavy growth of fine green fodder, which was used to feed a flock of sheep and other small stock. After this pasturage was over the rye "stubble" was turned under with a heavy coat of manure, and the field planted to corn. In this case the rye was what is termed a stolen crop, put in between the old meadow and the corn. Instead of the land lying idle from the time the grass was cut until plowed for corn, there had been an extra manuring, plowing, and a fodder crop. Some portion of the field was clay and the additional tillage had a good effect upon the mechanical conditions of the soil. The green crop thus produced came in at just that time in the spring when a supply of fodder of this kind is of special value—the pastures not having fully started and the dry stored food being limited in quantity and of high price.

Notes on Live Stock.

THE HORSES of the farm should be called upon for hard work this month. Plowing and other field work is a steady pull upon horse-flesh throughout the month, and to get good work we must feed well. Many horses can not work on new grain (corn, oats or barley) unless it is thoroughly dried. It will get dry in time by ordinary exposure, but enough may be dried for daily use by artificial means, and often with the best results. Young stock and pigs may have nubbins and soft corn, but do not feed the work or road horses with such stuff. Take good care of old horses; a horse sound at fifteen years is worth two colts, give him good feed and pasturage, and steady work on the farm. The younger horses may do on the road, but take care of the old servants for steady work. They will repay the care. Farm horses are not half groomed as a rule. There are no surer safeguards against disease than regular feeding and watering, and thorough grooming.

COWS.—There is an abundance of feed for milch cows this month on farms where roots form a prominent crop. The tops of beets, mangels, rutabagas and carrots, to say nothing of cabbages, are exceedingly well relished, and are excellent milk feed. This is one of the best months for cows to calve, because provision may be made for having so much good feed at little cost. Every where within a hundred miles of a large city, or within the proper "milk radius" of any town, milk is worth much more in winter than in summer, and should be produced.

VEALS.—Fall calves rarely get the size that spring calves do, because they cannot have so much milk, but by using little milk, and that skimmed, after the second week, they will do very well on hay tea and boiled linseed-cake gruel, to which some milk is added. They must be gradually accustomed to this diet, but will thrive upon it and make excellent veal at six or eight weeks old.

SHEEP.—Ewes bred in October, "yean" in March—rather early, except upon farms which can make early lambs a specialty. Sheep make as good manure as any farm stock, and who ever has much wheat straw should consider what better use he can make of it than to buy up some cheap sheep if he can find them, and winter them chiefly on straw, with a very little hay, and corn enough to coat their ribs well before spring, when they can be turned off at "cost and expenses," with a fine lot of manure for clear profit on the investment.

PIGS for slaughter should be confined and not allowed to forage for a living. They will fatten rapidly on little food. Small potatoes boiled, with a little meal added, will push them forward so that advantage may be taken of the market in case prices advance, or so that they will be well protected by fat against cold snaps should they come suddenly. It is truly said that nubbins will go further in October than sound corn in November.

BROOD SOWS should have the range of the orchards, where the wind-falls and grubs will furnish a good part of their food, and warm snug shelters where they can lie together during storms and keep one another warm.

POULTRY.—There is always a time early in November, or before, when well fattened poultry will sell for much more than fowls of the same quality will at Christmas. In fact, if the weather during next month be raw and cold, pigs and poultry may be fed well and not only not gain at all in weight, but not sell for as much as they would bring now. After the holidays, prices begin to advance again. When poultry are once fat, to keep them so at little cost they must be kept warm, fed at least three times a day, and always have fresh water.

LAYING FOWLS should have warm quarters, well lighted—supplied with dust boxes, by which the whole establishment may be made intolerably dusty in every corner—fed twice a day—soft feed with a little meat at 10 o'clock, and hard grain at dusk, with a good range, and plenty of pure water.

Keeping Grapes.

In keeping grapes, the first essential is a grape that will keep. The varieties differ greatly in this respect, the one most cultivated, the Concord, being the poorest keeper. Catawba, Diana, Iona, and Isabella, are among the best keepers. These do not succeed everywhere, but in localities where they will do well, they are still among the most profitable. The generally popular Delaware keeps better than the Concord, but not so long as those mentioned. To have grapes keep in the best condition, they must be carefully handled, as the broken skin of a single berry will cause decay to set in. The usual method is to pack the fruit in wooden boxes, holding three or five pounds. These boxes are made at all the grape centers. While paste-board boxes will answer for grapes that are to be sold at once, wooden ones are required for those to be kept. To keep well, the fruit must be thoroughly ripe. An experienced eye will at once know by the manner in which the cluster hangs from the vine, if the fruit is ripe. The stalk by which the cluster is attached loses its stiffness, and the bunch hangs directly down. Handling the fruit removes the bloom, and injures its appearance, hence the bunch should always be held by the stem. The implement stores have scissors which hold the cluster after it is cut, and all handling is avoided. The fruit as picked, is placed in shallow trays or boxes, these are conveyed to the fruit house, and stacked up in such a manner that the air will circulate among them. Large vineyards have special fruit houses, these are built like an ice-house, with double walls filled in with saw-dust, and a stove is provided to use in severe weather. In the absence of such a house, a room in the dwelling or in an out-building may be used. The object is to keep the temperature uniform and as cool as may be, without freezing. There should be abundant ventilation, and the direct sunlight excluded. The grapes in these trays will "cure" in a few days, that is, the skin will become toughened and the stems less rigid. When cured, they may be packed in boxes, or they may be left in the trays until marketed. Some growers pack at once, as soon as the fruit is in proper condition, and keep it in the boxes until it is sent off. The boxes are opened at the bottom and the bunches laid in, taking care to select such clusters as will pack closely; they should be so full that some pressure will be required in nailing on the bottom. The label of the grower is placed upon the top of the box, either before or after packing. The care as to temperature already mentioned must be observed with the fruit after it is packed. Put up in this manner, many tons of grapes reach the markets just before the holidays. For grapes that are sold as soon as ripe, various kinds of paper or wooden packages are used, according to the preferences of the market to which they are sent.

Treatment of Bulbs.

Spring bulbs should be planted as soon as they come from the dealers. The beds should be of a light, open, rich soil. The bulbs ought, as a general rule, to be put to a depth below the surface, equal to their own thickness. A good effect can be produced, by purchasing assorted varieties, without regard to names, but fanciers will desire to have named sorts, and for these they must pay an additional price. Bulbs of Crocuses and Snow-drop may be put here and there in clumps in the garden, and left without further attention. Old bulbs taken from the beds last summer, and those that flowered in pots, should be planted in the borders. Tender bulbs, Gladioluses, etc., must be taken up before the ground freezes, and stored in a cool place. Tuberoses that have not flowered, may be lifted and put in boxes or pots to be placed in a window or greenhouse, where they will bloom.

A Protection from Frosts.

A cold snap usually comes in early autumn, after which there are weeks of the finest days in the year. It therefore pays to take some pains to protect the more tender plants during two or three frosty nights, that their bloom may be enjoyed afterwards. A light sheet, or even newspapers spread over beds of geraniums, coleus, etc., will save them. A group of cannas may in this way be kept in its beauty, while, if left unprotected, the luxuriant growth is cut down by the frost, and soon becomes unsightly. Any one who has gone to all the care and toil of bringing a fine bed of tender plants to perfection, should certainly use every precaution to preserve the plants as long as possible.

The Importance of Heeling-in.

Heeling-in consists of burying the roots and parts of stems of trees in the soil. It may be done in such a manner as to be an injury to the plants. If one is at a distance from the nursery, and intends to set an orchard in the spring, it is best to secure the trees in the fall, and heel them in, when they will be ready for setting so soon as the ground is ready in the spring. The nurserymen are less hurried in autumn, and will be more certain to take the trees from the rows, and ship them in good shape, than during the rush of filling their orders in the spring. There will also be a larger

number to select from, and the chances are much greater of being able to get the better sorts, the supply of which may not exceed the demand. The common method of heeling-in, is to open a trench, and lay the trees down in a slanting position, and afterwards fill in with earth. No unfilled places should be left around the roots. If the trees are set upright, they are much exposed to the weather. Keep the labels carefully in place on the trees.

Blanching the Celery.

We last month described the manner of bringing the leaves of the celery into an upright position, or "handling," as the gardeners term it. The stalks are still green, and not fit for use until they have been whitened or "blanched." This is done by the complete exclusion of light, which is usually effected by a banking up of earth. Any other method that will completely shut out the light will answer. The banking up is done with a spade, one person on each side, taking the soil from between the rows and forming a steep bank against the plants, covering all except a few inches of the longest leaves; this bank is 10 or 12 inches wide at the bottom, and should be compact and smooth. In three or four weeks after banking the celery may be used. Only that which is needed early requires to be banked; the stock for winter use is blanched in trenches, or in boxes, and needs only the handling to bring the plants into the proper shape. A trench is dug in a dry place, 10 inches wide, and deep enough to contain the whole plant, so that the top will be level with the surface. The celery is then placed in the trench, packing it as closely as possible, in an erect position. When cold weather comes the celery, which is not injured by a moderate frost, must be covered with straw or leaves, the thickness of which must be increased as the weather becomes colder For family use, celery is often stored in boxes in the cellar, but the cellar must be cool. Boxes are made nine or ten inches wide, of any convenient length, and of a hight a little less than that of the plants; the bottom is covered with an inch or two of sand or soil, and the celery placed in it as in the trenches. The taking up and storing of the main crop, in the latitude of New York, is left until the middle of next month, but in more northern localities it must always be done earlier.

The Corn Smut.

The smut in Indian corn, so noticeable at this season, is a fungus, or minute plant of a very low order, that feeds upon the juices of the corn and finally makes itself conspicuous by the formation of a vast number of small, dust-like bodies in masses, upon the ears and other parts of the corn plant. This dark, purple dust is the congregated spores or seeds of the smut plant, and it is this which carries the fungus through the winter. It is difficult to determine just how or where the minute spores effect an entrance into the young growing corn; nevertheless it is important that they should be destroyed. This can be best done by picking off the smutted parts before the corn is cut. If this work is neglected, care should be taken to separate all the smut at the time of husking, and burn it; otherwise the spores will germinate the following year, and continue the pest. Corn smut is injurious to animals, acting both as a poison and mechanical irritant. For this reason the smut should be kept from the feeding stalls.

Picking Apples.

The proper picking and packing of apples is of great importance. The best keeping sorts will not be preserved well unless the fruit is uninjured in gathering, and packed securely. The most approved method of picking is by hand, with ladders, the fruit being put into a grain sack. The bottom and top of the sack are brought together and tied, and then hung upon the shoulder. A short stick may be used to keep the mouth of the sack open. The sack is quickly and easily emptied by lowering the mouth end and lifting upon the bottom. The sack can be lowered into the barrel and the apples will run out without being bruised as when they are poured in from a basket from the top. Many apple growers prefer to put the fruit in heaps for a few days that the skin may toughen before barreling. In short the aim in picking should be to not bruise the fruit, and in this way enhance its keeping quality. The fruit should not move about in the barrels during shipment, and to this end the apples must be shaken down when the barrel is half full and again when full, after which the head is put on and pressed into place with considerable force. It is much better to have the upper apples somewhat flattened than to leave the fruit so it will stir in the package. The opposite head should be marked as the one to be opened. The mistake is sometimes made of not sorting the fruit. Make at least two qualities or grades, and mark each package with its grade. This will secure uniformity in the fruit in each barrel, and a better price. There is much to be gained in the way of a reputation for careful picking, honest assorting and the proper packing of all kinds of fruit.

The Pea Weevil.

The most destructive insect enemy of the pea, is the Pea Weevil (*Bruchus pisi*). This beetle is about 1/5-inch in length, with a rusty black color, mixed with more or less white on the wing covers. A back view of the insect is shown many times enlarged, at *a*, in figure 1, with outlines of the natural

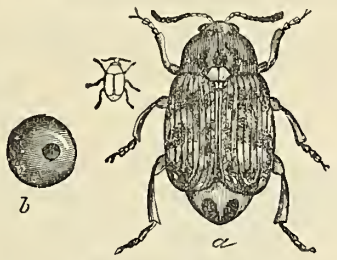


Fig. 1.—PEA WEEVIL.

size at the left. This weevil was first observed near Philadelphia several years ago, from which place it is supposed to have spread, until at the present time it is found in most of the States where peas are grown. The beetle appears when the peas are in bloom, and while the pods are growing rapidly, the females deposit their eggs upon any part of the surface, making no attempt to insert them within the young peas. The eggs are of a yellow color,

Fig. 2.—LARVA AND PUPA OF PEA WEEVIL.

and fastened to the pod by means of a viscid fluid, which when dried is white, and glistens like silk. Pods will often be found to have from ten to twenty such eggs deposited upon them, and later the young larvæ may be seen through the thin transparent shells. The larva soon makes its way through the pod into the nearest young pea, the place of entrance being a small spot, like the puncture of a pin. The larva or "worm," figure 2, *c*, feeds upon the substance of the pea, avoiding the germ, and with a wonderful knowledge of its future needs, eats a circular hole on one side of the pea (fig. 1 *b*,) leaving only the hull as the covering. After this it passes into the inactive, or pupa state (fig. 2 *d*,) and finally becomes a beetle. When ready to come out, the mature insect has simply to cut the thin hull, when it is free. The natural size of the larva, pupa, and imago, are all shown in figure 2, with an enlarged side view of the last or perfect state. The time of issuing depends somewhat upon the season. If the summer has been hot *and dry, like the past*, many will come out in the fall, but as a rule, they remain in the pea until spring. Many are sown with the seed, especially with the early varieties, and this becomes a very ready means of introducing the weevil into districts formerly free from the pest. All seed peas should be carefully examined, and all "buggy" ones rejected; they can be easily detected by the discolored eye spot. There is very little danger, however, of planting peas when the hull is gone, as this shows that the beetle has already made its exit. The quickest way to separate the sound from the unsound peas, is to throw them into water, when the infested ones will swim, and can be quickly removed. There is another and more certain remedy, requiring a unity of action among farmers of any region, that can not be expected in the present state of imperfect organization among them. It is evident that a mutual agreement, to not grow any peas for a year, would go far towards the extermination of the weevil. Such action should be followed by a most careful selection of seed for the following seasons. At present, the practicable and profitable method to pursue, is to sow only good sound seed.

Weeds Along the Road Sides.

Some farmers appear to forget that their land extends to the middle of the roadway, and that they have rights and duties in connection with the road sides. At this season it is common to find by the way side the largest weeds in the neighborhood. They have had it all their own way and this has been to ripen a large crop of seeds. Such neglect of the road side is a great mistake, as it not only gives a neglected appearance to the street, but is a means of propagating weeds that do much damage to the crops in the adjoining fields. It does not matter how clean the cultivated crop may be kept, if weeds are left to grow just over the fence. It is too late now to do more than collect and burn these, but in doing this, the seeds should all be killed, to make the work of subduing these pests less burdensome in the future, besides adding to the attractiveness of the street.

Preparing Plants for Winter.

It is a great mistake to delay the work of preparation for winter until it is suggested by cool nights or a warning given by blighting frosts. When a plant has been taken from a pot and planted in open ground it usually out-grows its former place and is too large for any vessel of convenient size. The root should be cut away to a considerable extent and likewise the top or foliage must be correspondingly reduced. Novices often fail at this point, for they dislike to part with any of the new growth, and set the plant in a pot unpruned and expect, what is not possible, that it will flourish. Cut back root system and branch system equally is the rule. Plants when thus transplanted need to be favored by being kept in the shade and sheltered from the drying winds until they have made a good start in the pots. Many of the house plants are kept in their pots during the summer and they will need repotting, or the pot washed and the surface soil replaced by fresh, rich earth. A larger pot is needed by those plants whose roots have formed a mat along the inner surface. The ball of earth can be examined quickly by spreading the left hand on the vessel—the stem passing between the fingers, and with the other hand on the bottom invert the pot and give the edge a downward tap against some object. If this does not succeed, pour some water around the edge, and after a short time repeat the operation. All old pots should be clean, and if new ones are used soak them in water until the pores are filled. A piece of broken vessel is placed over the bottom hole before filling in the potting earth. All the necessary pots, soil, etc., should be obtained now, that they may be at hand when needed at any time during the winter.

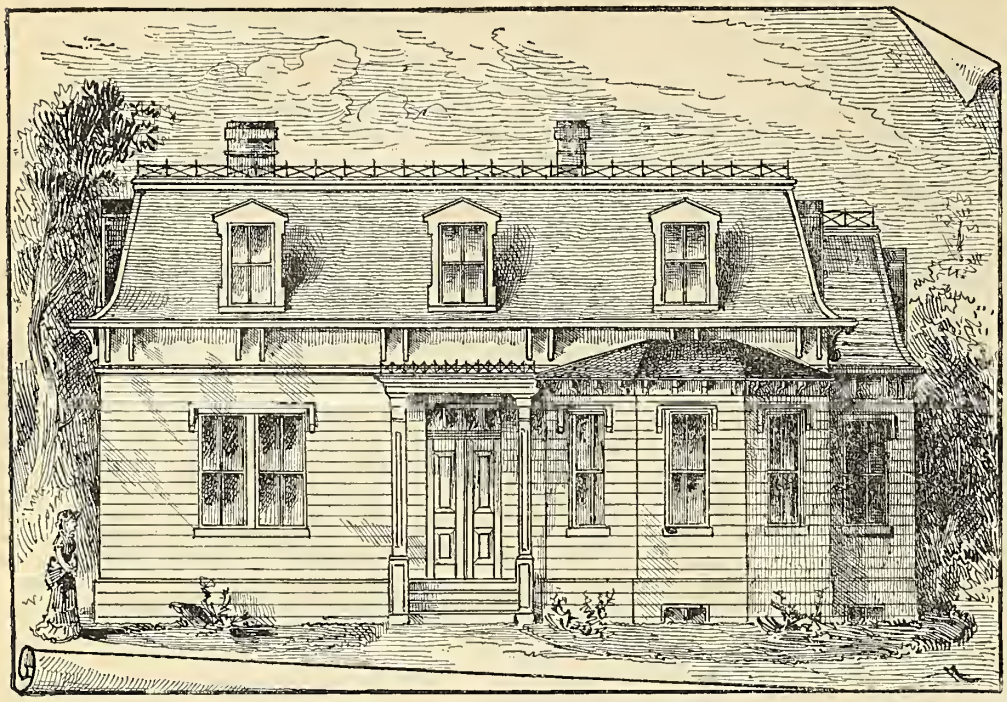


Fig. 1.—SIDE ELEVATION OF HOUSE.—*Engraved for the American Agriculturist.*

Country House Costing $2,400 to $2,800.

Cost, as here Described, $2,500.

CLASS III, 3D PRIZE.--BY JAMES DUNLOP, SOZORRO, ONT.

Aecompanying the same general floor plans, and room arrangement, Mr. Dunlop sends two quite different elevation plans and modes of construction, one to be built with wood and a Mansard Roof; the other with brick and steep pitch shingle roof. With these are detailed figures and estimates. The wooden house is more cheaply finished, and the estimates, on the basis of the prices named for the materials, make the total cost about $2,500. We present in this number the elevation and estimates for the one entirely of wood, with Mansard Roof. While giving about the same interior conveniences so far as room space is concerned, it is claimed for the Mansard roof that it is better adapted for broad prairies and other locations exposed to strong winds and hurricanes, as it is lower and presents less surface for receiving the force of the tempest. The elevation is shown in figure 1, and the general features will be learned from the detailed description below.....**Cellar** (fig. 2).—Hight of walls, 6½ feet in the clear. The window under the store room of the first floor has a Shute for putting in wood, coal, and other heavy articles. The entrance is by a stairway from the kitchen. It is well lighted with six windows, and there is a heating Furnace, for wood or coal, hy which the hall and three rooms of the first story are heated by flue pipes, and also the three large bed-rooms and bath-room in the second story. The walls of the unexeavated portion are 3½ feet high, on broken-stone foundation, where stones are available. All brick walls are 18 inches thick.....**First Story** (fig. 3).—Hight of ceiling 10½ feet. The Kitchen and Dining-room are separated by two Pantries, which are fitted with drawers and shelving, and there is a sliding panel, 2 feet wide and 18 inches high, in the partition for passing dishes, etc., through. There is a large Storeroom at tbe end of the hall, which, by a little alteration of the plan, can be increased in size and used as a bed closet. There is also a Hall and Coal Closet under the stairs. The Dining-Room and Parlor open to the Veranda by French Windows. A Fan Light over the front door lights the hall. The Kitchen is supplied with a Sink and Pump.... **Second Story** (fig. 4).—Hight of ceiling 8 feet in the clear, in Bath-room 10 feet, and above the Kitchen 7½ feet. The arrangement is such that all the Family Bed-rooms are on the main landing. By placing a door on the right of the first landing of the main stair-case, the bed-room above the dining-room can also be appropriated to the use of servants, the entrance being by the back staircase. The doors of the Linen-room and small bed-room on the main landing, and of the Bath-room, have the upper panels of obscured glass, to light the halls and stairways. The bath-room is furnished with a bath-tub and seat-closet and all the neeessary fixtures, and a large cold-water cistern overhead, which is supplied from the roof. At the top of the main landing there is a large linen storeroom fitted up with shelving and drawers. There are good Closets in the large bed-rooms, and thimbles should be built into all the chimneys from the bed-rooms for extra heating, if necessary....**Construction.**—The walls of the house are framed of studs, 6 by 2 inches, set 16 inches apart, well braced, and securely spiked to the joisting of both stories. The outside is covered with 1-inch sheathing, and over that with dressed clapboards. The inside, walls and partitions, are lathed and plastered. The inner partitions are with studs, 4 by 2 inches. In the Mansard roof the studs are 6 by 2 inches, seeurely spiked and braced to the lower joisting and studs, and well braeed at the corners. The outside is covered with 1-inch sheathing, and shingled. The partition studs are 4 by 2 inches, set 16 inches apart, and the whole is lathed and plastered. The flat roof is sloping about 1 ineh in 6 feet. It is covered with 1¼-ineh planks, tongued and grooved, but not dressed, and on that is a layer of asphalt, three-quarter inch thick, mixed with as much sand as it will take up and applied when boiling hot. There is a coping round the edge, with a light iron ornamental railing. The plastering is three-coat work. All the sashes are four-light, and the lower ones are hung to balance-weights. The front door is in two parts, and all the doors are panelled with flush mouldings.

The following are the quantities and estimates:

Excavation and stone work and drain	$165.00
Dimension timber 10,100 ft., @ $15 ₱ M, viz.: Sills and Plates, 920 ft.; 190 Studs, 12 ft. by 6 by 2 in.; 128 Studs, 10 ft. by 6 by 2 in.; 128 Braces, 3 ft. by 6 by 1 in.; 40 Studs, 12 ft. by 4 by 2 in.; 62 Joists, 16 ft. by 10 by 2 in.; 28 Joists, 14 ft. by 10 by 2 in.; 29 Joists, 10 ft. by 6 by 2 in.; 10 Joists, 6 ft. by 6 by 2 in.; 8 Joists, 4 ft. by 6 by 2 in.; 1 Beam, 18 ft. by 8 by 4 in.; 1 Beam, 18 ft. by 10 by 4 in.; 1 Beam, 18 ft. by 10 by 2 in.; 1 Beam, 4 ft. by 10 by 2 in.; 120 Studs, 10 ft. by 4 by 2 in., 30 Rafters, 30 ft. by 8 by 2 in.; 15 Rafters, 20 ft. by 8 by 2 in.	151.50
2,100 ft. Flooring, @ $18	37.80
3,300 ft. Outer Sheathing, @ $12	39.60
1,700 ft. Clapboards, @ $26	44.20
1,000 ft. Roof Flooring, 1½-in., tongued and grooved,	18.00
Mouldings, Brackets, and Cornices	60.00
Coping, Rail, on roof and porch	60.00
110 yds. Asphalt, @ 60c.	66.00
3,000 Bricks, for chimneys, laid, @ $11	33.00
366 bdls. Lath, @ 12c	43.90
1,284 yds. Plastering, @ 25c	321.00
240 ft. Cornicing, @ 20c	48.00
1 Front Door, $12; 2 Outer Doors, $16; 18 Inner Doors, at $7 each, $126	154.00
12 Lower Windows, hung, $120; 12 Dormer, $60	180.00
6 Cellar Windows, $24; Cellar Stairs, $12	36.00
Main Staircase, $50; Back Staircase, $24	74.00
Porch and Steps, $36; Roof to Bay Window, $10	46.00
Painting, $140; Plumber's Work, Sink, etc., $90	230.00
Nails, etc., $32; Door Fittings, $30; 2 Mantels, $20	82.00
Pantry and Closet Fittings	31.00
13,000 Shingles, @ $3 ₱ M	39.00
Labor not included in above	290.00
Heating Furnace and Pipes	250.00
Total Cost	$2,500.00

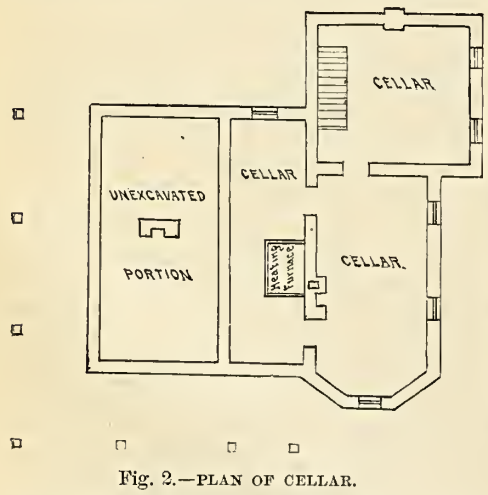


Fig. 2.—PLAN OF CELLAR.

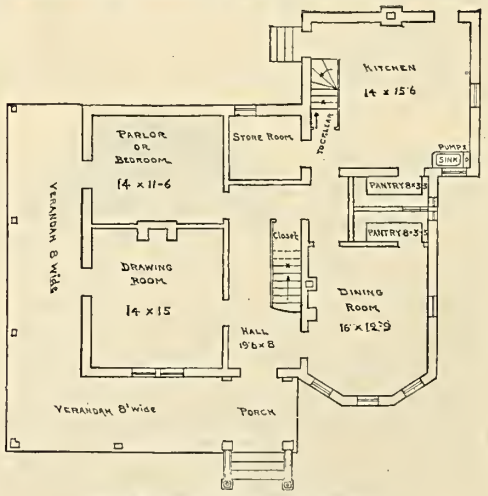


Fig. 3.—PLAN OF FIRST STORY.

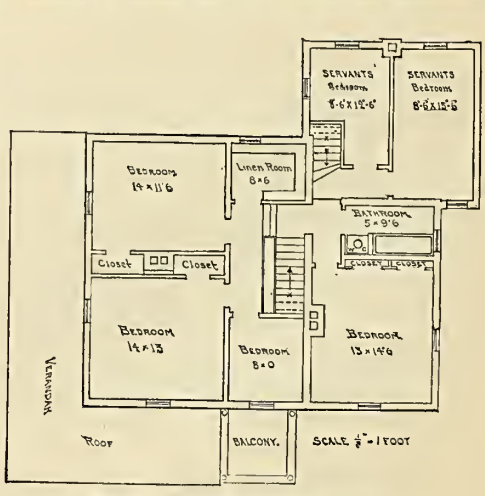


Fig. 4.—PLAN OF SECOND STORY.

Ensilaging Sorghum.—"G. P. N.," Ky. The application of the principle of the Silo, the packing of fresh fodder closely, without access of air, is not confined to Indian Corn. It was in use in Germany for Clover, long before the Silo was thought of, and it has been used for other crops besides corn. If you find it profitable to raise Sorghum to feed fresh, you will no doubt be able to preserve it in Silos. As it is more rich in sugar than the corn, greater care should be taken to exclude the air, and thus avoid an injurious fermentation. It is not so much the kind of food ensilaged, as the way it is kept.

Camp Tip-Top.

You can have an "outing" without going far from home. The city practice of seeking in the summer months an exchange of air and surroundings is so rapidly extending, that both village and rural dwellers are now coming to conform to it—and wisely too, for it promotes both health and happiness. Very many who live on farms can secure this change from the humdrum of every-day-life at little expense, and without going far from home. Build upon the wooded hill on your farm a little rustic house, where your family can "put up" for a few weeks every summer. The change will be a novelty as well as an enjoyment for yourself and your family. The engraving illustrates such a dwelling which the proprietor of "Houghton Farm" has built on the mountain side, overlooking the main residence. The air is very invigorating, the nights are cool, the view is very commanding and beautiful, the family go to and fro, housekeeping is easy, and life is far more enjoyable than at a crowded resort. Here you can have your city friends come and visit you, living on your plain fare, sleeping on the extemporized beds.

CAMP TIP-TOP.—*Drawn and Engraved for the American Agriculturist.*

Far up the side of Shawangunk Mountain, overlooking the rich agricultural regions of the Ulster Valley, an enterprizing citizen of Ellenville has constructed several cheap board cabins. They are in active demand by the people below, who report that they find just as cool air, and just as much enjoyment there, as though they went a hundred miles or more away from home. You can construct such a cottage or hamlet at a trifling cost. Camp Tip-Top went up almost in a day. The sides of the room consist of swinging boards, which can be fastened up at night time, thus permitting the air to sweep through both floors. Several farmers living in the neighborhood of a wooded hill or mountain, might club together and erect their cabins in close proximity, thereby forming a pleasant company to spend a short vacation most enjoyably—where they will have a little romance and a great deal of enjoyment thrown into their rural lives, at a very little expense. Now in the autumn is a good time, when you have leisure, to construct such a home retreat for next summer. Select a site near a spring, and if you do not feel able to employ a carpenter, you can, with a few tools and some timber, readily construct your own cabin.

Advice about Planting Pears.

"G. K.," Green Co., Pa., writes us: "I intend to set out an acre in dwarf pears this fall and I wish your advice in selecting the varieties, as this is a matter in which I am not posted. Please name a few of the most advisable for all purposes and oblige, etc." Our response to this would be like the advice of Punch to those about to marry: "Don't." We assume that our friend has an acre that he wishes to devote to pear culture; he has read that dwarf pears can be planted closely, will yield largely, and that he can get more from an acre in dwarfs than from one in standards. If he wishes to get the largest possible number of varieties from an acre for his own amusement and instruction in pear culture, then he can plant dwarfs. If, as we suppose, he has profit in view, he should be shy of them. He wisbes to make a pear-orchard; then his first question should be: "Where is the fruit to be marketed?" If to be supplied to a market near by, then let him inquire of the leading dealers, the kinds most in demand. Not long ago a prominent nurseryman gave it as his opinion that "of every 100 pear-trees planted in this country, 90 were Bartletts." This may be somewhat extravagant, but it is not far from the truth. If our friend has determined to plant dwarf trees, we can say that experience has shown that but one variety can he profitably cultivated as a dwarf, the Duchesse d'Angouléme, generally known in the markets as "The Duchess." All others are more profitable upon pear roots. For the varieties to plant on our friend's acre, the demands of the market should be consulted. Bartlett sells everywhere, because every one knows it. Beurré Clairgeau, the showiest of pears, comes later, as does the Seckel, which is also generally known, and the Duchesse d'Angouléme is of the same season. The popular later varieties are: Lawrence, Beurré d'Anjou, Winter Nelis and Vicar of Winkfield. The list might be greatly extended, but with pears, as with all other products, it is best before planting to consult the market.

"Plaster of Paris."—"C. C.," Washington, Iowa, asks us about "Plaster of Paris" as a fertilizer. He, of course, refers to Plaster, which is often incorrectly called Plaster of Paris. The Plaster used upon land is native Sulphate of Lime, or Gypsum. This, as taken from the quarry, contains about one-fourth its weight of water. When heated, this water is driven off, and it becomes Plaster of Paris, which, when mixed with water, "sets," or becomes hard, and is used for hard finish and for making moulds, etc. Plaster of Paris, which has been heated, is never used as a fertilizer. The crude rock merely ground fine, and known as Plaster, Land Plaster, and Gypsum, is the material employed. Plaster is usually sold by the dealers in agricultural implements. It is a fertilizer that is often of considerable value, especially upon clover.

Bee Notes for October.

Requisites to Safe Wintering.

There is no subject which is of more interest to the bee-keeper than that of wintering. About once in four or five years there is general and wide-spread mortality among the bees of our Northern States, and every year more or less loss. Bees, to winter safely, must not be subjected to very long continued cold. The air about the hive should be at around 45° Fahrenheit. Each colony should also have a good proportion of young bees, and at least 30 pounds of food. This last may be capped honey or syrup made of the best sugar. Too much care can not be taken to have the air in the hive kept sweet and wholesome. There are several methods used to secure uniform temperature. Some persons use Chaff hives, which differ from the common hive in being double-walled, and having a space of four or five inches filled in with fine chaff or fine dry saw-dust. These are in great favor with some of our best bee-keepers. The objections to them are their cost; they are heavy and awkward to move, and the fact that in very cold winters, like those of 1880 and 1881, they have failed in many cases. Another method is to surround the common hive with a box, and fill the space, which may be as wide as desired, with chaff or sawdust. In this case we must so arrange that the bees can fly whenever the heat impels them to do so. Packing also fails in very severe winters. Another method which finds favor with some, usually those that have a limited experience, is to bury the bees, surrounding the hives with straw, and arranging for ventilation as in burying fruit. This method works well in most cases. If, however, the bees become overheated, or the field mice or moles fill the entrance to the hive, the apiarist knows nothing of the trouble. On the whole, burying is not to be recommended to all, though in very careful hands it may generally succeed. The best method, and one that we may rely upon as certain of success, if rightly managed, is that of wintering in a cellar.

How to Make a Good Bee Cellar.

The room for the bees should be separate from the rest of the cellar, unaffected by odors from vegetables or heat from the rest of the cellar. From near the bottom of this room run a five-inch drain-tile through the ground for 80 feet, and then bring it to the surface. This tile should be at least six feet below the surface of the ground. Somewhere within the room, from near the bottom, a four-inch pipe of tin or iron should pass up and connect with a pipe from a stove that is in constant use. Thus each day, as there is a fire in the stove, the air is drawn from the room, and is supplied by the drain-tile. Thus the air is kept constantly sweet and of a proper temperature. As the bees are put into the cellar, remove the cover of the hives slightly, leaving the cloth cover on, and the entrance open. The cellar should be mice-proof, and the outer end of the pipe ventilator

be protected by a wire gauze. Such a cellar costs but little, is safe, saves the labor of moving the bees out in winter or spring for a flight, as they do not become uneasy, and often saves honey enough in one winter to pay for its construction. Bees in such a cellar eat far less than when wintered outdoors, even if in a chaff hive. Some object to a cellar and regard a chaff hive as best fitted to prevent "spring dwindling." This is not wise. If the bees are kept in such a cellar until the warm days are fully come, in the more Northern States as late as April 10th, and then by use of the division board, the brood chamber is kept so that every frame will be covered with bees, there is no trouble with spring dwindling. Such has been our practice, and we never had a case of this discase. Even with chaff hives, bees would do better if managed in this way. Some use a double-walled house above ground, instead of a cellar. The objection to this is the trouble in keeping the temperature uniform. If there is not enough honey capped in September, and on so few frames that these are nearly full, then they should be fed either thick honey or syrup. This should be fed early, so that the cells will be capped over. All this work had better be done before October 5th.

The Hessian Fly.

There are two broods of the Hessian fly (*Cecidomyia destructor*,) one in the spring, and the second in autumn. The fall brood appears in August or September, and each female deposits about thirty eggs on the leaves of the young winter wheat. The eggs hatch in four days, and the larvæ or maggots make their way down to the base of the leaf, and remain between the leaf and stem, where they feed upon the juices of the plant, and cause it to turn yellow. In about a month after the eggs are laid, the "flax-seed" state is assumed, in which the larvæ remains until the warm days of spring, when it passes into the pupa, and afterwards emerges as the mature fly, at the end of April. The eggs laid by these flies soon hatch, and the maggots, after a few weeks, go into the little, brown, oval form of the "flax-seed" state, and produce flies in autumn, thus completing the cycle in the life of this destructive pest of the farmer.

As a precaution, it is recommended to sow a part of the wheat early, and if afflicted by the fly, plow and sow the rest late in the season. If the pest is not abundant, the crop may be saved by the use of additional manure, or by cultivation. Pasturing the infested wheat field with sheep in late autumn, will destroy many of the eggs and young insects. The same good results are obtained by rolling the crop. Only the hardy, and more vigorous varieties of wheat should be sown in infested localities. There are a number of natural enemies of the Hessian fly, such as the Ichneumon parasites, whose combined efforts destroy nearly nine-tenths of all the flies that are hatched. The burning of stubble is therefore not recommended, as it will destroy the useful parasites in large numbers, as well as the pest upon which they prey.

Plant Growth Viewed as to Time.

Plants are arranged in three groups as to their period of existence, namely: Annual, biennial, perennial; that is, whether they live for one, two, or more than two years. The natural beginning of a seed-bearing plant is the growth from the seed, or germination. The early life of all plants in the three groups is very much the same. It is an enlargement of the embryo, or young plantlet, that was formed in the seed before it was separated from the mother plant. This first growth is at the expense of food that was packed away with the embryo, either within or around its thickened seed leaves, and both the plant and the food that is to nourish its first growth are surrounded by protective coverings, called the seed coats. Germination, though a complicated chemico-vital process, is in essence the forcing of the young plant from its surrounding coverings, and the establishment of itself in the soil and the sunshine. This is a process that is common to all plants that grow from seeds. The beginning of an independent existence is the formation of a seed, and with the seeds the cycle is completed. The aim of every plant is the multiplication and perpetuation of its kind, and as the seed is the common form in which plant units are cast off, it is clear that in the formation of seed we have the end toward which vegetation tends.

In the annual plant the whole round of life is completed in a single year; it germinates, develops its system of roots, stems and leaves, produces its flowers and perfects its offspring—the seed, all within the compass of a single year. With this work done the old plant dies. In the biennial the method is somewhat different. The first year is devoted to the work of accumulating material out of which the plant makes its seeds the following year. Compared with the annual there is an unusual development of roots and foliage, and towards the end of summer, a storing up of a large amount of concentrated food in some part of the plant. Contrast the barley plant with its short life of a few months, and simple straightforwardness in all its processes, with the carrot, turnip or beet, which has a large root system and many leaves, for the first year, and an accumulation of starch, sugar, etc., in the main root, at the end of the season. No seeds have been formed, and the end of the plant's existence has not been reached. The next season the fleshy root sends up a flower stem, and the store of organic matter, starch, etc., that was made the previous season is used up in the formation and perfecting a large number of seeds. The original plant loses its life in the production of many offspring or seeds.

In the third class is included all of our trees and shrubs, and a vast number of herbs that are known by the general term of perennials. They grow on from year to year, and in most cases have no definite time in which to complete the cycle. The first year of the young tree, maple or oak, is materially different from that of the annual oats or biennial beet; its time for getting ready for the production of seed is lengthened out through several years. After the time for the bearing of offspring has come, centuries many pass before death ensues, in each year of which, if conditions are favorable, seeds may be formed. The process may be so slow that more than a single season is required for the growth and perfection of a seed.

Exports and Imports---A Bad Showing.

Last year we presented some interesting figures showing that for a year previous to August 1, 1881, we had sent abroad from this country products amounting to $921,784,193, while we had imported only $753,240,125 worth, leaving a balance in our favor of $168 544,068. These figures include gold and silver, which are as much our products as are wheat, corn, cotton, petroleum, etc. But by the figures just received from the Bureau of Statistics, we learn that the total Exports for the twelve months prior to August 1882, amount to only $767,-111,964, while the Imports amount to $799,959,736 —an increase of $46,719,611 over the previous year, and leaving a balance of trade against us of $32,-847,772. This change has of course been largely due to the drouth of 1881, and the diminished amount of grain exported, but partly to the more active demand for foreign manufactures, on account of the prosperous condition of the country. The bad picture is that we are so largely importing and consuming foreign manufactures and luxuries—importing more than we are paying for with our own products. Last year we received $91,168,600 more gold and silver than we sent abroad. The present year (12 months to Aug. 1,) we sent abroad $6,945,089 more than we received from other countries. The present good crops will chauge the balance of trade if the favorable crops abroad do not prevent the free export of our breadstuffs, cotton, etc., except at unremunerative figures.

While the officials are suppressing the sale of lottery tickets by dealers at home, there is apparently no protection from foreign invasion. Some of those formerly engaged in lotteries here, have merely moved across the border, where they make free use of the mails in spite of our postal laws. A distinguished railroad official writes us with some just indignation that one of the circulars of

"The Royal New Brunswick Distribution"

was sent to his residence. This inclosed a sample ticket, with instructions for the ordering of more. To show how far-reaching are the promoters of these schemes, and how these foreign nuisances pervade every corner of the land, a friend in a small town in Oregon sends a circular and a bunch of tickets of a lottery for the aid of a church at Inchicore, a small place near Dublin, Ireland! The story is, that a church was begun, money gave out; hence an appeal to friends in America, who are tempted by the chance of drawing a great variety of articles, from a "Valuable Clock" down to a "Large Loaf of Best Sugar," to buy tickets. We would suggest to the person who has come all the way from Stradbally to manage the lottery in America, that every time he posts a circular like the one before us, he violates a United States law.

An Institution for Feeble-Minded Children,

at Englewood, Cook Co., Ill., has just been officially declared to be a fraud, the Post-office Department having stopped the delivery of money-orders or registered letters to that "institution."

"Ozone" Turns Up Again.

The Cincinnati fraud of selling colored sulphur under the name of "Ozone" was first exposed by us in February last. One would have supposed that every paper in the land would take up the matter with the hope of protecting its readers from this attractive but miserable swindle. Instead of this, some journals still advertise it. Were the claims made for the stuff well founded, it would be of great value to every housekeeper, especially those of moderate means. As it is, the great majority of those who have bought the stuff from motives of economy are the very ones who can least afford to lose their money. In a circular dated June 1, the "Preserving Company" say, as an excuse for not answering letters of inquiry: "It has been all that we could accomplish to properly attend to entering the orders for goods and getting off our shipments." A large share of those who write, asking us to expose this or that fraud, conclude by saying: "Don't publish my name." Not of this kind is the writer of the last letter we have had on the "Ozone" matter, who says:

"You May Use My Name and Address in Full."

Mr. Newton Best, Eberly's Mills, Cumberland Co., Pa., who writes as above, took the agency of the stuff for two counties. The "conditions" of the "agency grant," are, that the agent shall purchase "one hundred packages of the said Ozone, for each county covered by the grant," and pay $100 for them, after which he can go on and make the stuff, paying a royalty of ten cents a pound, for each pound he manufactures, and settle up once a week. This is sharp. If the agent were told at the start, that he were to engage in putting up sulphur with a false label, he would, if honest, have nothing to do with it, but the Company get $100 out of him, before he has the secret. Mr. Best writes, that after purchasing his first (and last) lot of packages, he tried to preserve rhubarb, apples, cabbage, beef, sausage, etc., etc., and every one spoiled, that "it did not preserve a single arti-

cle." Finding its worthlessness, Mr. B. would sell none of the stuff. He wrote to the "Company," demanding that his money be returned, but can get no reply. The "Company" having named the Comptroller of Cincinnati as a reference, Mr. Best wrote to that officer, Mr. Eshelby, who replied that his name was used without his consent; that he has received "stacks of letters, all containing the same questions, and I have advised them, as I do you, to let Ozone entirely alone. I could recommend its use to nobody."—Is there no power in Cincinnati to shut up this swindling concern, that in every package of so-called "Ozone" it sells is "obtaining money under false pretenses?"

A Dealer in Manuscripts.

"S.S.," Smyrna, Del., gives his experience with "E. E.," in Detroit, Mich. Seeing an advertisement for MSS., he sent one to the address. A letter informed him that the MS., "though very good, was not perfect,"—who ever saw one that was? If properly revised, it would be worth $25 or $30. He had a reviser who would fix it for $3, and he would then sell it. The proposition to have the revision made, and deduct the cost of so doing from the amount received from the sale, was not accepted. That $3 was what "E. E." wanted, but did not get. The trick is an old one, but "E. E." appears to be a new hand at it.

The Same Old Note Story

comes this time from Caroline Co., Md., told by "H. C.," who "hopes we will do the farmers a favor by warning them, etc." For several years we have "warned" again and again. One year we had in every number a standing warning "Farmers be careful what you sign," yet to this day swindlers find victims among farmers. As this number will be seen by thousands who are not regular readers, we will oblige "H. C.," and others by giving a brief account of the manner of operating. The agent was from Cleveland, Ohio, and the article was

"Double Surface Feed Grinders."

The unfortunate farmer, "E. J. C," was to sell three of these "grinders" worth $80 each, and have a fourth for his commission; as in all such cases, he was told that they need not be paid for until sold. The agent asked him to sign a postal card, merely to request the Eagle Machine Works to send on the grinders. The machines did not come, but a collecting agent did, and the postal card turned out to be an agreement to pay for the machines whenever the settling agent should call. After much difficulty, the agent induced "E. J. C." to sign a note for the amount, $234.00. Shortly the note was on the market, and to close the matter the giver of the note paid $150.00 for it. Mr. C. made a great mistake in signing the postal. When he found he was defrauded in this, he made a worse mistake in giving a note without value received. These agents are said to be operating in Delaware, Maryland and Virginia, but similar swindles have been carried on in various States for years. Is there no help for it? We regret to find that our warning is as much needed now in some localities as it was five years ago.

Farmers, Sign Nothing for a Stranger,

and do not let a smooth-tongued agent talk you into dealing in articles about which you know nothing. This time it is a "Feed Grinder," a year or two ago it was a mower-knife "grinder"; the grinding of the money out of the farmer seems to be their chief grinding accomplished.

The "London Needle Company."

The advertisement of this Company was admitted to our columns after an inspection and trial of what they claimed to be samples of the needles they sent out at a low price. Since we have learned that this needle business is mixed up with an "Award of Premiums," which, with its numbered tickets, etc., looks so much like a lottery, we have decided not to advertise the concern in the future. The circulars of the Company are worded in a most careful manner, evidently with a view to avoid the law against lotteries. Still they have numbered tickets, and are obliged to admit that some numbers are "awarded" premiums, and that others are not.

He Did Not Get His Ring.

A correspondent in Maine writes us that he sent 50 cents to a concern in Fulton Street, N. Y., with one of their "coupons" for a ring. He received a printed notice that his order had been received, and the "goods" would be sent in a few days. Since then he has written twice, and can get neither ring nor reply. When parties take unusual methods to sell their articles, it is well to be cautious; all this "coupon" business, which a few years ago had such a run in certain papers, is all nonsense.

He Wants the Names of Ladies,

and he also wishes to make some pennies. A lady on Long Island sends us a circular which came from a chap in Vienna, Ga., which asks her to send the names of a number of her lady friends, to whom he can forward his Catalogue of "Southern Curiosities (now in press)." To pay (he says "recompense") her for the trouble, he "will send two beautiful (dark brown and red) Florida Sea Beans and a box of Southern Moss and other curiosities. Please enclose in your letter 30 cents in postage stamps, to pay postage, etc." As the Beans may be worth two cents, and the "Southern Moss" is worth but a few cents a cart-load, there will be a clear profit of at least 25 cents on each remittance. Ladies should beware of such appeals.

What of the Crops and Prices?

No other question is so puzzling to the mass of farmers, as to decide whether to sell at once the wheat, corn, oats, etc., which they can spare, or to hold on in the hope of higher prices. To no other subject do we give so much thought, as to an effort to form a fair estimate of the probable future range of prices, that we may offer trustworthy suggestions to our readers. But never before have we been more "at sea" on this question than during the first week of September of the present year.—Formerly the range of prices was largely governed by the actual aggregate yield here and abroad—the relative supply and demand. But during two years past a class of speculators, far more numerous, and of much greater financial strength than ever before, have undertaken to manipulate the grain and provision markets. The buying and selling on margins have been carried to enormous figures. The aggregate sales of corn, wheat, oats, pork, bacon, and lard, have many times exceeded the entire product of the country. Cliques have been formed to buy up the entire available supply, and put the prices up or down, as best suited their speculations from time to time. By such means the great mass of consumers have been compelled to pay much higher prices for their daily food than should have prevailed, and the natural exports have been retarded and greatly curtailed, and much injury done to the entire business of the country.

As some parties have already bought or sold largely for delivery, or settlement of margins, for all the later months in this year, it is the interest of these parties on the one hand to diligently circulate every possible disastrous report as to the weather, and the condition of the growing crop. Every rain storm, and every fall of the thermometer has been a godsend to them, and telegraphed far and wide, anything that would sustain prices has been money in their pockets. On the other hand, a large class, having contracted to deliver, or pay a margin on any product, at a stated price, are doing their utmost to create the impression that there is to be an unprecedented yield. Under such influences, it is scarcely to be wondered at that from day to day there come estimates of a yield of corn varying all the way from 1,200,000,000 to 2,000,000,000 bushels, and of wheat from 450,000,000 to 600,000,000 bushels. The present probability is that the yield will be a mean between these various high and low estimates. If no long-continued storms come on to destroy much grain still in the shock in the field, there seems a fair probability of our having a total wheat yield of 500,000,000 bushels—a larger crop than ever grown before. Of the 1,754,861,535 bushels of corn grown in 1879, according to the Census Reports, Illinois produced 325,792,481 bushels; Iowa, 275,024,247 bushels; Missouri, 202,485,723 bushels; Indiana, 115,482,300 bushels; Ohio 111,877,124; and Kansas, 105,729,528 bushels—a total for these six States of 1,136,391,200 bushels, or nearly two-thirds (65 per cent) of the entire crop. In this connection we give the Report of the Agricultural Bureau on the condition of the growing corn for August in 1879 and 1882, as follows—100 representing an average crop:

	1879.	1882.		1879.	1882.
Illinois.....	104	59	Indiana....	83	78
Iowa.....	104	70	Ohio.	89	77
Missouri..	115	91	Kansas.....	114	109

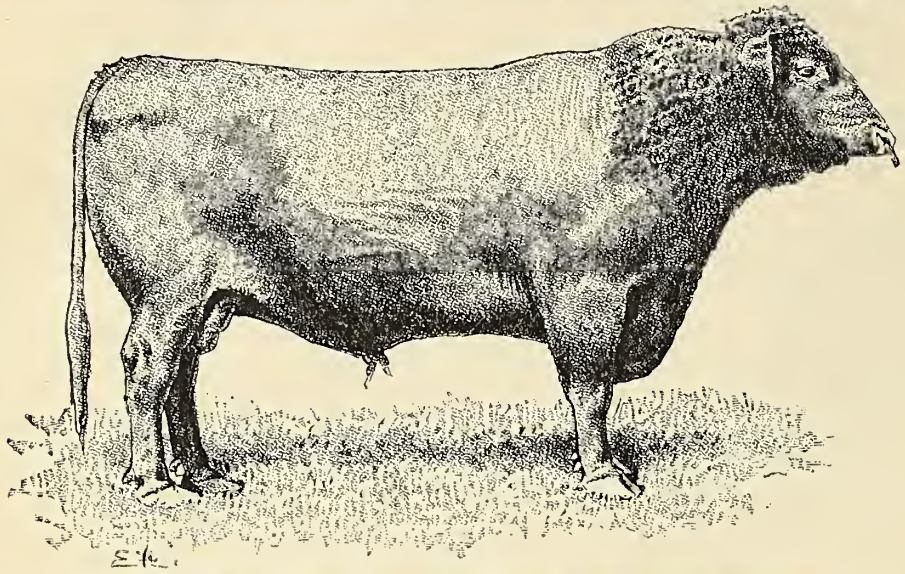
This shows a decided decrease of crop for these leading States, but a part of it will be made up by a larger acreage, and by the present favorable weather. Kansas has already secured an enormous crop of corn. Missouri is well up toward an average condition, with a large acreage as in most of the corn-growing States just named above. In nearly all the Southern States the acreage and yield of corn very far surpass any previous year. If the September frosts come late in the Northern belt, the probabilities are in favor of a total yield of some 1,800,000,000 bushels or more—the largest crop ever grown. The hog crop and the supply of good beef are largely determined by the corn crop and its prices, though the small supply of corn last year, and the high prices, greatly diminished the number of swine, and there will be fewer to fatten. It looks at the present writing (Sept. 6) as if the general yield of wheat, corn, and oats will be too large to be manipulated by speculators; and the same of dairy products. For some weeks past there have been numerous reports of bad crops in Europe; but the latest intelligence indicates a more favorable condition of the harvests in most foreign countries. The present estimate is for a total yield in England of 88,000,000 bushels, or 7,000,000 to 9,000,000 bushels more than was calculated upon two or three weeks ago. How far the Egyptian war may affect the receipts from that country, and from India via the Suez Canal, can only be determined by the progress of the contest. The increase in our population by nearly two million immigrants during three years past, in addition to the natural increase, will require much more wheat and corn for home consumption.

The Outlook To-day is, that there will be an abundance of comparatively cheap food in all parts of our own country, and that the foreign demand will be sufficient to absorb the surplus, provided, always, that mere speculation does not maintain too high prices. Probably good or bad weather, as it affects the ripening corn, and wheat still out in the field, will decide whether prices continue at present figures, or rise or fall a little. Judging from present indications, we shall look for no material change from current rates, though the favorable weather still prevailing is tending to lower values. The only advice we can give to many anxious inquirers is, that it is on the whole best to *sell when ready*, and avoid risk of storage, and of lower rates. It hardly pays the average producer to speculate upon the future—especially when the shrewdest observers among those who have immense investments still at stake, are themselves in a very uncertain state of mind as to the outlook.

The World's Harvest.—Just as we close the above, we have a cable report from M. Estienne, a French Statistician of high authority, who says in effect: "Never before in the long time since these reports have been collected, has the harvest in the whole Northern hemisphere been so good all around. We have usually had to report a deficiency either in Europe or America. *This year there is absolutely none. The world has over an average harvest.*" To this another cable-gram from London adds: "Spain is the only country from which the reports are unfavorable." These reports confirm what we had above indicated, that no material advance in the price of breadstuffs can be reasonably looked for, but it will be a year of abundant food at moderate prices, and of general prosperity among all classes in all countries.

The Red Polled Cattle.

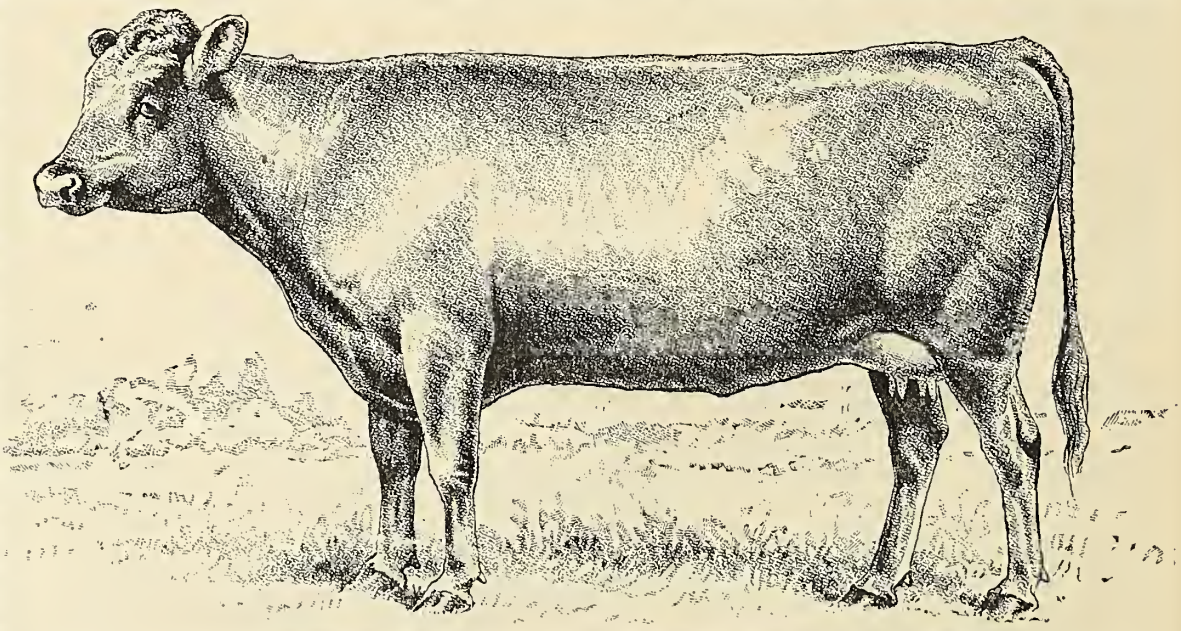
In domesticating animals, and in breeding them for particular uses, they have been wonderfully modified. This is strikingly illustrated in the various breeds of cattle. In these, not only have the milking, fattening, and other useful qualities been increased, but the useless characters reduced. In wild cattle, horns, and large ones, are of great use to the animal, but in domestication, the bull is not obliged to establish his right to lead the herd by battle; hence he no longer needs large horns, while their presence is a constant source of danger to his owner. In the improvement of cattle, the horns have diminished in size, notably in the famous Shorthorn breed, and in a few breeds these appendages have disappeared altogether. That the hornless or polled cattle were derived from those having horns is shown by the occasional appearance of a calf with small horns, which are only loosely attached to the skin. The Galloway, regarded as the original polled breed, has been known for nearly 200 years, and still remains distinct, showing that the tendency to reversion is not strong. The Galloway cattle are generally black, and are highly prized in the part of Scotland from which they get their name. The Angus is another Scotch breed of polled cattle. The Galloways were long ago taken to the English counties of Norfolk and Suffolk, where, by crossing with the native stock of those counties, animals were produced that were a marked improvement upon the originals. The polled character was retained and the beef points greatly improved, without injury to their excellent milking qualities. These animals are now known as Red Polled cattle, the distinction between Norfolk and Suffolk being dropped. They have a deep red color, even upon the udder; the tip of the tail is sometimes white. The head is neat, and a tuft of hair hangs over the forehead. A good quality claimed for the Red Polled cattle is hardiness of constitution, enabling them to thrive on scanty pasturage, and to withstand severe winters and the piercing winds of spring and autumn. They are noted for good milking qualities. There are several noted families of these animals, and a herd-book records their pedigrees.



RED-POLLED BULL "RUFUS."—*Drawn by E. Forbes for the American Agriculturist.*

Polled cattle, that is, cattle without horns, have been gradually growing in favor in this country as well as in Great Britain. The *American Agriculturist* has in former years called attention to these breeds, and has given illustrations of noted animals. An importation of animals, the selection and departure of which excited much interest among the cattle men of England, has recently reached this country. The lot, consisting of a bull and ten heifers of various ages, was imported by Robert J. Kimball, Esq., a banker of this city, for the improvement of his private herd at "Suffolk Farm," Randolph, Orange Co., Vt. Though the animals are not for sale, the importation is of interest to every cattle breeder in the country, as it is not possible to bring here a high grade animal of any breed without ultimately affecting the general cattle interests of the country. The selection was made by Mr. Kimball with great care, and the leading breeders of these animals took pride in making it a representative one. The cattle arrived in this country in good condition. Sketches of them were immediately made by our artist. We give below that of "Bridesmaid," a two-year-old heifer, purchased by Mr. Kimball from the herd of Mr. Lofft, M. P., which received the first prize at the Suffolk County Show, the second at the Norfolk, and also the second at the Royal (all England) last June. The bull "Rufus," of which our artist likewise presents a picture, is five years old, belongs to J. J. Colman, Member of Parliament, and sired "Romeo" and several others of the Kimball importation. We give the picture of "Rufus," as a fair illustration of the polled breed at maturity. These polled cattle have excellent beef points, take on flesh rapidly, while the absence of horns is a point of great importance to shippers. The hornless animals are much less liable to injure one another than those with large horns, while the greater safety and convenience of the attendants is an important point. The venerable A. B. Allen, long an authority in all cattle matters, many years ago, in the *American Agriculturist*, advocated as a most desirable improvement in American beef cattle the importation of polled bulls, to be crossed upon long-horned Texan stock. What he saw of polled cattle in Europe induced him to make this suggestion, and the fact that bulls of polled breed strongly impress their characters upon their offspring, renders the suggestion as important to-day as when it was first made. The leader of this private herd, the bull "Romeo," comes of a strain which has already a high reputation in England and is regarded as occupying the same position among polled cattle that is held by the "Princess" blood among Shorthorns. A large share of the cows and heifers have taken prizes at the leading cattle shows, have excellent pedigrees, and contain the blood of the most noted milkers. While the polled cows generally give milk rich in butter, there is a great difference in their yield at the pail. As in the Shorthorns, so celebrated as beef animals, there are among polled cattle certain families noted as being famous milkers. The editor of the Red Polled Herd-Book regards the present herd as "the best selection ever made," giving Americans "an opportunity of seeing good typical animals."

We shall watch with a considerable degree of interest Mr. Kimball's experiments with these cattle, for his personal satisfaction, and may give our readers the benefit of them.



RED POLLED HEIFER "BRIDESMAID."—*Drawn by E. Forbes for the American Agriculturist.*

THE lowest valuation of the Indian Corn crop of this country, for several years past, exceeds Six Hundred Million Dollars. The corn is chiefly "made" during 100 days, counting from the last week in May, in the largest corn producing States. We may, however, reckon this crop as yielding to the producers nearly Seven Hundred Million Dollars, whether sold in the kernel, or condensed into pork, bacon, and lard, and allow 117 days for the entire growth. In either case, it is an interesting thought that, on the average, there are six million dollars worth of corn silently gathered from the soil and air each day of the growing season. The thought is intensified when we remember that during many cold days hardly any progress is made, while on some hot days, succeeding a moderate rain fall, the growth is three or four times as great as on average days. So those people were not very wide of the mark, who, when sweltering in a hot July or August day, consoled themselves and others with the remark, "well, this day is worth Twenty Million Dollars to our national crop," to say nothing of the benefit to other growing crops.

Farming in Egypt.

The eyes of the world are centred on the Egyptians, their way of living, manners and customs, every thing, in fact, relating to them is eagerly read and listened to. It is noteworthy that a nation of such antiquity retains so many customs of a thousand years ago. Our artist gives illustrations of implements used by the farmers of

EGYPTIAN FARMING.—*Engraved for the American Agriculturist.*

Pharaoh's time, taken from the originals found at Thebes, and now in the collection of Egyptian Antiquities, in the rooms of the New York Historical Society.

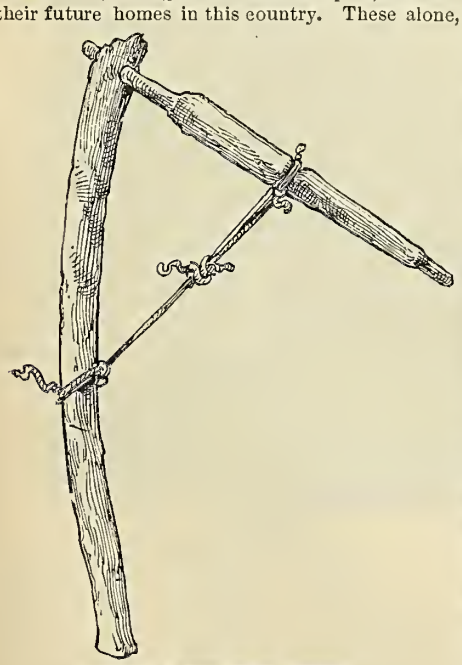
The hoe is an exceedingly well preserved specimen, and such tools are used to-day by the inhabitants, without alteration or improvement. We append an illustration from a drawing in the British Museum, by an Egyptian artist of Pharaoh's time. This will show how these hoes were used in connection with plowing.

The basket, also found at Thebes, made of the small ends of the Papyrus leaf, was used to sow the seed. This basket is beautifully made, and when found, was filled with nuts. The band of cloth was placed about it to support the sides, and a piece of twisted Papyrus made the handle. The Egyptian drawing is on the same Papyrus scroll, and well indicates the use of this basket by the people.

In this progressive age it seems impossible that a nation can retain its primitive ways. It may be that the wedge now entering in the shape of the war with England may change all this, and for the sake of the country we trust it may be so.

A 16,000 and 40,000 City Every Week.

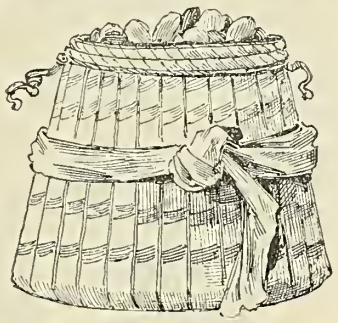
Eight Hundred Thousand People have come from other lands, during twelve months past, to make their future homes in this country. These alone,



EGYPTIAN HOE FROM THEBES.

if settling together, would populate a city of nearly 16,000 inhabitants every week throughout the year. At the average rate of increase during the past decade (3 per cent. per annum), over 1¼ million are now added annually. Call this increase for the past year only 1,280,000 aside from immigration, and adding the 800,000 new-comers, we have an *increase* of population during the past year of **2,080,000, or 40,000** *for each week!* To appreciate this wonderful growth, we can take into account the fact that the following twenty cities would be peopled in as many weeks, or, on the average, one of them each week, and 52 such cities during a year! Springfield, Mass., 33,340; Memphis, Tenn., 33,592; Portland, Me., 33,810; Utica, N. Y., 33,914; Oakland, Cal., 34,555; Denver, Col., 35,629; Atlanta, Ga., 37,409; Lynn, Mass., 38,274; Dayton, O., 38,678; Lawrence, Mass., 39,151; St. Paul, Minn., 41,473; Camden, N. J., 41,659; Hartford, Conn., 42,015; Wilmington, Del., 42,478; Reading, Pa., 43,278; Nashville, Tenn., 43,350; Scranton, Pa., 45,850; Minneapolis, Minn., 46,887; Fall River, Mass, 48,961, and Charleston, S. C., 49,984—the average population of the twenty cities being 40,200.

Again, in the *American Agriculturist* for May last



EGYPTIAN BASKET FROM THEBES.

we gave the population of each of the One Hundred Largest Cities in the United States, the lowest one of which has 20,000 inhabitants. The annual growth of our population, including the past year's new-comers, would suffice to make up the entire number of inhabitants found in sixty-eight of these 100 largest cities—those numbering from 20,000 up to 49,984 inhabitants.—Still again: This last year's growth of population would people the whole of the State of Indiana, with enough left over to supply two-thirds of the State of Delaware; or all of Massachusetts and Rhode Island, with 30,000 to spare; or all of Maine, New Hampshire, Vermont, and Connecticut, with about 140,000 to spare; or it would people the whole of Iowa or Kentucky, with as many left over as the census-gatherers found in all of Nebraska!

The Story of Guenon's Wonderful Discovery.

"This is most wonderful! Why have you nothing about it in the *American Agriculturist?*" said a gentleman of agricultural tastes, who a few days ago chanced to look at Guenon's latest volume (which, by the way, is being translated). "There are thousands of your readers who know nothing about this, who would be greatly interested in it." It is now more than 30 years since Guenon's theory on Milch Cows was first developed. Still, we agree with our friend that the subject is one which is new to a large share of the present generation of farmers. Those who deal in or raise milch cows had long been accustomed to form some estimate of their value as milk-producers from certain external signs: the shape and texture of the udder, the size of the milk-veins, the color of the ears, etc. The owner of a few choice cows on the Island of Jersey at the present day does not fail to call attention to the ears and the color of the skin as indicating "richness." Guenon's method differs from these in using other external marks, and in the discovery of some that allow of the prediction of the length of time the yield of milk will continue after the cow is again with calf. Guenon's story in brief is this: He was the son of a French nurseryman, and early learned to notice minute differences in fruit trees, and to observe that certain marks indicated excellence in fruit. His powers of minute observation he applied to cows. He found that external marks, different from any that had heretofore been taken into account, bore a direct relation to the performance of the animal at the pail. Why they should do so, he does not attempt to explain. That they do allow the animal's history to be read and its future to be foretold with surprising accuracy, is a fact which he established before he published his "system." He went before Government officials and those eminent in agriculture, and told the story of animals he then saw for the first time with an accuracy that astonished their owners and others who witnessed it. When Guenon's system was first published, though it had the prestige of the endorsement of those eminent in French agriculture, it was ridiculed by some, and ignored by many, but the few who took care to examine its merits, found that it had a hard basis of facts. Dairymen and breeders of the present day, while they may not adopt the system in all its details, make more or less use of it. Guenon's observations taught him that the hairs upon the rear of the animal, extending from the udder up the inside of the thighs, nearly to the base of the tail, had a different texture and direction from the hair upon the adjacent parts. This formed a distinct outline, varying in shape and in size, or extent, in different animals, but always bearing a direct relation to the quantity of milk. This peculiar disposition of the hair he calls the "escutcheon," and he gives distinct names to its various forms. These forms indicate his classes, of which there are ten; of each class he makes several orders founded on the extent of the escutcheon. He also notices various breaks, or faults, in the escutcheon, caused by the hair taking a different direction, or being of a color or lustre unlike that of the escutcheon itself. These variations he terms "Feathers" (*epis*), and finds that their position and size bear relation to the length of time the flow of milk will continue, etc. The various markings are illustrated by figures which soon familiarize the eye with their outline and extent, and facilitate their application in practice. Not the least important part of Guenon's discovery is, the markings are present upon the males as well as upon the females, and in breeding, reference should be had to the escutcheon, etc., of the bull as well as of the cow, if the best results would be had. The markings are also distinct in the calf in both sexes, and allow the breeder to decide with considerable certainty while the animal is yet young whether it is worth raising or only fit to sell to the shambles.

Cheap Silos.

D. D. BISHOP.

Undoubtedly, many farmers would avail themselves of ensilage, if they felt that they could afford the expense of a silo. Most of the plans given are beyond the means of the average farmer, both as to expense of materials, and the cost of the skilled labor to build them. In Bohemia, where ensilage has long been used, no brick wall is thought necessary, the cement being laid directly upon the earth; and I am convinced that there is hardly a situation in this country (certainly not unless it be a bad quicksand) where the same method cannot be successfully practised. In any place where a good cistern can be made by plastering directly upon the earth, a good, practical silo can also be built by the exercise of a little ingenuity. There are thousands of places where, with a substratum of red or grey rock, clay, hard-pan, or firm gravel, the building of brick walls or any other walls would be so much expense thrown away. Nothing more is needed than the cement and the sand with which to mix it.

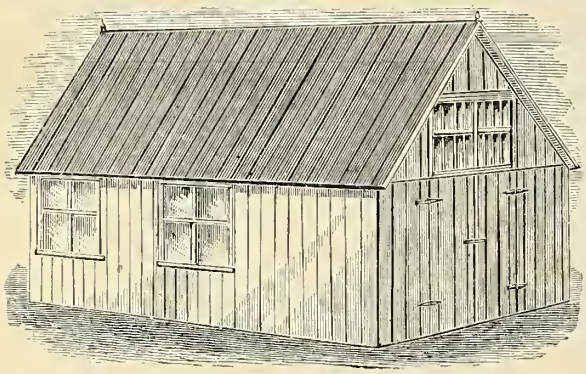


Fig. 1.—EXTERIOR OF SILO BUILDING.

Set the scantlings with which you expect to build the frame, in the corners and sides. Brace across, to keep the boards from springing in, and then place planks outside the uprights. Cement against the planks for a face,

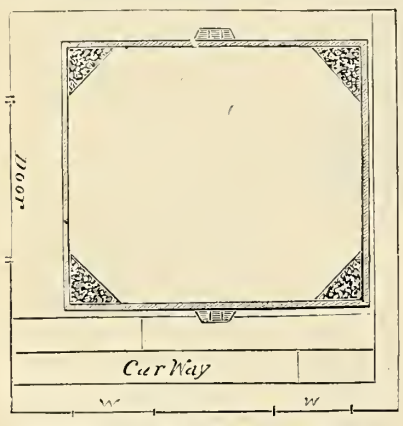


Fig. 2.—PLAN OF SILO AND BUILDING.

and back upon the outside by grouting cement mixed with broken stones, or by pounding the earth solid behind the wall. Thus lay the width (hight) of one plank at a time all around. When the walls are set, knock out the timber and finish the face. They should be made as in figure 2, for strength, filled in with stone at the corners (cobbles or broken stone) if possible.

Other things may be as you like, but the walls of the silo must be tight. Put the bottom in last, strengthened as in figure 3, and finish the inside with clear cement washed on with a brush, until it is perfectly true up and down the sides, and all the holes and crevices tight. On many farms some kind of stone may be had, when nothing more than common stone-mason's work is needed to produce the best results. The floor inside the shed should be very firm. Some would prefer to frame timbers of some size around the edge, to protect from breakage during the work of filling or removing the contents. A liberal margin should be allowed on all sides of the pit to hold plank, weight-boxes, etc., for convenience of working, and especially for room upon one side, to bring in a large box (or car) upon wheels in which to transport the ensilage to the mangers.

Another objection in the way of a general use of silos has been the difficulty in handling plank and weights without two men's hands. With a common iron staple towards one end of the plank, and some sort of handles on the weight boxes, one man can cover and uncover the silo by means of a simple tackle. The point of economy is in the depth of the pit. The deeper the better every way. You more than double the capacity, and the probability of perfect ensilage, by doubling the depth. A silo of this kind can be built in a barn cellar, or inside or under any existing building or shed, thereby saving the expense of covering. It is supposed that one end of this is against the stable, for convenience in feeding. Sometimes it may be best to build alongside the present barn, making a lean-to roof. It is best to plan so as to make no waste in cutting the lengths of lumber usually to be had.

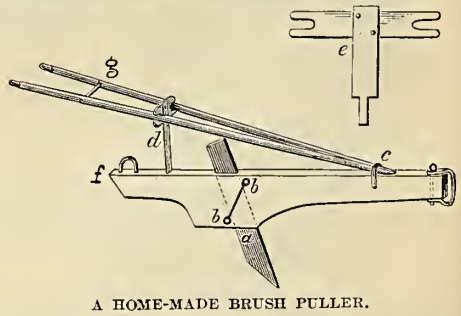
With ordinary mechanical skill the pit may be built (counting thirty cents per cubic yard for excavating) for twenty to twenty-five cents per square yard of inside surface. For capacity of pit and convenience of working, I do not think that true economy would be exercised in trying to make one smaller than I have suggested. Another advantage is, that the capacity can be increased at any time by lengthening the shed if all works satisfactorily. The roof is of 18-foot stuff, with 3-inch battens: about 1,400 square feet. Sides and ends, 6 feet to eaves—about 550 square feet. Covering, including windows and fixtures, $45. The pit itself can be made as tight as a cistern, strong and perfect, for $80. Fixtures, weight-boxes, plank for cover, sills, frame, etc., will reach $125. With an ordinary Indian summer this season, this silo can be built and filled before freezing weather.

Fig. 3.—WALL AND BOTTOM OF SILO.

Wheat and Chess.—The annual series of letters on this subject, begins with one from "B. E.," Moravia. No State is given, and the post-mark being, as usual, quite blind, we do not know in which of several Moravias our friend resides. However, he has done better than the majority of those who write us about wheat turning to chess, for he sends a specimen to illustrate his remarks. He writes: "I send by this mail, a specimen of wheat and chess coming from the same root. I think that in this, nature has solved the much mooted question—does wheat turn to chess?" He states that the specimen came from a field where the ground was wet, and the wheat mostly killed by frost during the winter, where there are distinct stools of wheat and of chess, "and numerous specimens like the one sent." We asked our associate to accompany us to the basement of the office, where there is an abundant supply of water, taking the specimen with us. This had a few knocks to free the roots from the adhering loose earth, and was then placed under the tap, until the roots were washed perfectly clean. We gave our friend the wheat tops of the specimen, while we took the chess stems, asking him to pull gently, and to stop if he felt the breaking of the smallest rootlet. We pulled gently, and in a short time, each of us had, the one, a complete wheat plant, and the other, a complete chess plant, separated without breaking a fibre as large as a silk-worm's thread. A grain of wheat and one of chess had fallen close together, and there germinated; the plants grew up with intertwisted root fibres, but there was no more real connection between them, than if they had grown in different fields, or in separate counties. We have made an examination of a great number of chess and wheat specimens, and the result has always been the same. With a careful manipulation, the roots readily separated, without breaking a fibre.

A Brush Puller.

Mr. J. W. Phillips, Essex Co., N. Y., sends us a sketch and description of a brush puller which he has used and likes so well that he thinks it would pay any person to build one, who has brush to clear from land. It is also handy to hoist out old stumps, logs, and even stones that lie near the surface. The beam is made from a 4 by 6½-in. hard-wood timber, 5 ft. 2 in. long, hewed down at each end to 4 in.; the grapple irons, *a*, are 19 in. long, made of 3 by $^5/_8$-in. tire iron. They are fastened to the beam 16 in. from the back end with a large $^3/_4$-in. gripe which goes through the beam at *b*. The handles fasten on the top of the beam at *c* by means of a strap of iron 2 in. wide, bent over and bolted through the beam. The handles pass under this strap and are pinned. They are braced up at *d* with a T-shaped standard which holds them 6 in. above the beam at that place. The cross-piece, *e*, which is notched at the end, to receive the handles, is 12 in. long. The handles are held



A HOME-MADE BRUSH PULLER.

in the notches by an iron rod at *g*. There is another strap of iron at *f*, through which runs a lever, to lift on as the team draws. The grapple iron pitches forward 2$^1/_4$ in. from the perpendicular. It took him a half day to make the puller, and at a cost of about $1.50.

OCTOBER.—*Engraved for the American Agriculturist, after Koch.*

Perhaps the most subtle and winning aspect of October is its repose. In every other month Nature is at work, from the first of November, when the wintry storms set in, and the first snowflake falls, marking the first stages of preparation for the spring that lies beyond, to late September, when the last ripe apples are gathered from the trees. Every other month has its special work in the economy of the year, but in October there is a pause. The work of the year has been accomplished, and that of the next is still to be begun. At no other season is there such a hush, such silence in the woods, such brooding peace over the meadows and the wide surfaces of lake and river. The peace and rest of a Sabbath are in the air, as if Nature had closed her workshops and locked the doors of her numberless activities, and turned from work to worship. The record of a twelvemonth is complete and may be read in the fields whose very stubble brings back the vision of the waving harvests, in the orchards which have gone step by step from the fragrance and whiteness of their first blooming to the ripe and rounded fruit, in the forests which have exchanged their first delicate verdure for carnation robes. At no time does Nature present a more picturesque appearance than during this month. The ten thousand city dwellers who have returned to their homes, may well regret that they did not tarry longer by field and river, among the hill-sides, now so attractive in their golden foliage, and so rich in their luscious fruits.

Ensilaging Corn Fodder.

BY COL. MASON C. WELD.

Ensilage and ensilaging are quite recent words that are now adopted into our language. The use of the silo for preserving green fodder, and especially corn fodder, is so thoroughly introduced, that people are settling down in their views about it to common sense, or something like it. The idea that we can get more or better feed out of a silo than we put in is given up, and everybody knows that we take out less feed, which is really not so good. It is, however, preserved with little loss, and of a very fair quality for feeding, provided the silo is well made and treated.

Corn fodder can be raised more cheaply than an equal amount of food in any other way, unless, indeed, sorghum or pearl millet or some similar plant be used in place of Indian corn, when there might be a question as to which plant produced most. The evidence, so far, is in favor of corn, as being the readiest means for converting manure into food, which we have at our disposal.

The silo must be tight—some persons say it need not be, but they are wrong. No doubt the best are laid up of stone and well cemented, but boards will do perfectly. They ought, however, to be matched, or battened, and well nailed, so that the pit shall be as nearly air-tight as possible. The reason of this is that access of air causes decomposition, which wastes the fodder, and besides, the air promotes alcoholic and acetous fermentation. The formation of alcohol occurs in juices of plants, which contain sugar, after a single sufficient exposure to the air, and its continuance depends upon the presence of fermenting substances, also contained in the juice. So long as this fermentation continues with moderate activity, there can be no formation of vinegar, because this requires constant access of air.

In such a mass as corn fodder in a silo presents, there must be some alcoholic fermentation, but there need be but very little. The stalks come from the cutter wet with juice, and this exposure induces fermentation, which sets in at once. Now, if the silo be rapidly filled and weighted at once with fully 300 pounds to the square foot, it will settle down to a compact mass, and the fermentation will cease, except where the air has access to it. Alcoholic fermentation, I have said, is continuous after it has once started, so long as the ferment is present. In a silo filled as described, the ferment will be soon exhausted, for if the knives of the cutter be sharp, so as to make a clean cut, nearly all the juices of the plant will remain within the unbroken cells, hence comparatively secure from access of air, and the fermentive principle so locked up as not to be able to continue the action. Juice enough is exposed to start an active development of carbonic acid gas and alcohol from the sugar, and this gas fills the whole mass, to the exclusion of the air—driving it out, and so, after an active "spurt," the fermentation nearly or quite ceases. The way described is not the usual or *natural* way, so to speak, of filling a silo. The pit may be all right, the weights may be prepared, with the topping planks and everything in order, but the farmer does not think it necessary to hire extra hands, so he begins—perhaps with his old cutter, a good one for dry fodder, but not near fast enough for green. He does a good day's work, perhaps, with two teams and four men, and gets his silo a quarter full. This he has well tramped down, and is satisfied with his day's work. He finds the next morning that it is quite hot, and that pleases him, for he knows, perhaps, that fermentation must ensue, and that it is necessary to prevent the unfavorable action of the air. So, after working for several days, the silo is filled, well tramped down, and possibly sufficiently weighted.

The result of this tramping is, that the stalks, being filled with pith, and the pith full of juice, are very much like so many little sponges, which, every time they are pressed or squeezed, and the pressure taken off, return partially, at least, to their former size. The cells are thus ruptured, the juice in part is pressed out, and air drawn into the interior of the pieces of stalk. The more thorough and frequent the tramping, the more are the juices exposed to the action of the air, and the more alcohol will be formed. Finally, when this vinous mass is opened, it will seem to be well preserved, but has the odor of beer, and after a very short exposure, will be found to be getting very sour. The beer odor came from the presence of alcohol, which is rapidly converted into vinegar, so that six to twelve hours' exposure will make some ensilage very sour. Cattle will eat it, but it works an injury to the milk, making it unfit food for infants and invalids, to say the least. Besides all this, there is a very considerable loss of food-value.

If the silo be not tight, and the air has access to the contents, if there be a lack of pressure, or too much exposure to the air after the pit is opened, positive decay, which cannot be considered "fermentation," is very sure to take place. When put down in the best possible way, the incipient alcoholic fermentation soon gives place to another kind, which causes no such loss of valuable food-elements. These changes consist in the formation of *lactic acid*—the acid of sour milk—and are almost identical with those which take place in the stomach after the fodder is eaten. This is the fermentation which goes on in sauer-kraut, and it makes the ensilage sweeter and more palatable than that which contains alcohol, and probably more easily digested than if it were fresh cut from the field.

To sum up all: The silo should be tight, of such a size that it can be filled rapidly, if possible, at one operation, without tramping, and loaded with the full weight at once, even if the weights have to be lifted for filling up the silo at some subsequent time. The best cutter is the one working most rapidly, and making a clean cut without pressing or bruising the stalks. The best weights are no doubt boxes of earth or stones, weighing 400 or 500 pounds each, which can be most conveniently handled by block tackle.

Rats.—A New York City merchant writes us that he "is terribly annoyed by large numbers of rats in the coach house at his country place," and asks how to get rid of them. We are not told whether the coach house is a detached building, or a room in the stable. In either case, the coach house need contain nothing that can harbor rats. If the harness is kept in the same room, it is probably hung up in sight, or in closed cupboards. We assume that the rats, to do their mischief, come in from without, and they must enter when the doors are left open, or through holes they have gnawed in the sides. In such a room it will not be difficult to find the hole where the rats enter. The holes may be effectively closed by tacking over them pieces of thin tin plate. This will not prevent them from making new holes. Perhaps the best plan will be to close all the holes but one or two, and set a trap at these. One of the best traps is the old fashioned wooden one, with a falling door at each end, and a platform in the middle for the bait. If this trap be set at once, the rats will avoid it. Arrange it so that it will not spring, and place it in front of the hole until the rats become accustomed to it, and will pass through it without fear. Then, after they have no suspicion of it, set the trap, and one or more rats will be caught. After disposing of the inmates, the trap should be soaked in water for a day or two before using again. With a little care and patience, all the rats may be caught. If poison is not objectionable, Phosphorous paste may be used with fatal effect.

Ground Limestone as a Fertilizer.

[The enclosed letter from W. H. Jordan, Prof. of Agriculture in the Penna. State College, to "J. C. F.," Allegheny Co., discusses the subject of Ground Limestone as a fertilizer, and with his consent we publish it.—EDS.]

Two facts can be stated which will probably help you in settling this matter of the use of Ground Limestone. First—Neither caustic lime (burnt) nor ground limestone is a fertilizer proper. The latter is mainly Carbonate of Lime, and the former is mostly Lime, the Carbonic Acid having been driven off by heat. It would be a rare case where it would be necessary to add either lime or limestone to supply lime for the use of plants. Both substances, if they are of benefit, are so because they liberate material in the soil which plants take up in growth, that had not previously been available. So you see that instead of adding any valuable plant food to the soil, lime really makes it poorer in material for future growth. When you add to the soil barn-yard manure or commercial fertilizers, you are supplying just that material with which land that is cropped needs replenishing.

Secondly—Ground limestone can do nothing that cannot be accomplished by caustic lime. The only difference between the two is that the limestone contains Carbonic Acid which burned lime does not. The Carbonic Acid is not only of no use to plants when applied to the soil combined with lime, but rather the chances are greatly in favor of the lime doing more good without it. The decomposing effect of lime is principally what gives it value to the farmer, and if there is any difference in this respect, it certainly must be in favor of burned lime rather than the limestone. In our fertilizer experiments this year on the Central Experimental Farm, we applied lime to one plot, and ground limestone to another. The yield of oats per acre was exactly the same in the two cases, and but little more than where no fertilizer was applied. No difference could be seen between the plots on which the two substances were applied; 500 lbs. of each were used on one-eighth of an acre. The experiment will be continued during a term of several years.

If burned lime can be bought more cheaply

than ground limestone, as I understand it can, I would prefer the burned lime by all means. And, let me add, that the only proper use of lime is on land to which considerable barn-yard manure or other fertilizer is applied. The use of lime without any true fertilizer has in numerous cases resulted in impoverished and broken down fields.

A "Ladder" for Loading Corn.

Mr. "A. C. S.," Gerard, Kansas, writes us as follows: "Take a plank two inches thick,

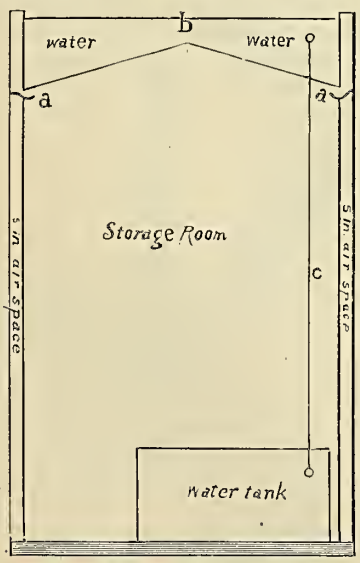
A "LADDER" FOR LOADING CORN.

ten inches wide, and eight feet long. Nail upon one side of it cleats, of one-inch by two-inch stuff, at easy stepping distances apart. At the upper end nail upon the underside of the plank, a cleat projecting four inches upon either side, to which attach small ropes or chains, and suspend the ladder from the hind end of the rack, so that one end of the plank will rest upon the ground. This makes a very convenient step-ladder, up which a man can carry a large armful of fodder, and thus load his wagon to its full capacity with greater ease than two men could load it from the ground. I find it of great convenience to me when hauling corn fodder alone." The "Ladder" is shown in the engraving.

A Novel Plan for Cold Storage of Butter.

HON. X. A. WILLARD.

One of the essentials in butter manufacture is a good storage room where a proper and uniform temperature may be maintained. The air should be free from odors, as these are



SECTION OF COOL STORAGE ROOM.

liable to be absorbed by the butter, to the injury of its flavor. There is a difference of opinion as to the best temperature to be maintained, that the butter may hold its flavor longest while being sent to market and during the time it is exposed to variable temperature in being distributed to customers. If the butter has been kept at very low temperature, in ice-cold chambers, it is more liable to be affected by heat when taken out and exposed during hot weather. Some claim that butter stored in a temperature of from 55° to 60° F. gives good results, and is all that can be desired for the perfect preservation of both the flavor and texture in butter.

Proceeding upon this idea, a novel cold storage room has been constructed at a creamery in Herkimer Co., N. Y. The room is 10 ft. by 20 ft., and 12 ft. high. It is constructed at any convenient place, inside the factory, by setting up scantlings upon which ceiling, or matched boards, are nailed on both sides, leaving an air space between about 5 inches wide. The top of the room is a V-shaped pan of galvanized iron, the angle projecting upward in the center — the whole resting on and supported by ribs of wood conforming with the shape of the pan, and running crosswise of the room at the top. This pan is for the reception of cold spring water, and one end is a little lower than the other, so that it may be easily drained at any time desired. The greatest depth of the pan at the sides is six inches. There is also a pan at the bottom of the room, raised about 6 or 8 inches above the narrow walk on one side. The walk is used as a convenience for storing the packages, or in moving from one end of the room to the other. Substantial slats run across the pan, and are placed a few inches apart, and upon these slats the butter packages are stored. In the operation of this device cold spring water is constantly flowing into and covering the entire surface of the pan, or top of the room. The waste water is conducted down a pipe into the lower pan, and when this last is filled, it escapes through a waste pipe at one end.

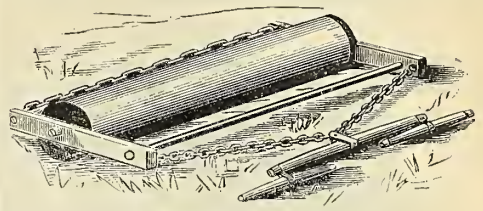
The spring water at this creamery is about 50° in temperature as it enters the upper pan, and the storage room during the hottest weather never gets above 60°. At the time of my visit, on the 2d of August, the weather was very hot, the thermometer ranging about 94° outside the creamery, while in the butter storage room the temperature was a little below 60°. The water in the lower pan absorbs and carries off any odors, and the air in the room was sweet and pure, in delightful contrast to some of the underground butter cellars which I have visited.

This arrangement appeared to be efficient, and as it can be erected cheaply inside of any creamery where running water can be carried to the desired hight, it seemed to be worthy of adoption. This description of it may prove suggestive to those who are in want of a good cold storage room for butter.

The figure represents a sectional view of the room; *a*, *a*, are gutters for carrying off drips, as there is a considerable condensation of moisture on the bottom of the pan. The upper edge of the pan is represented at *b*, and the overflow pipe is seen at *c*; this conducts the water from the pan to the tank below.

A Home-Made Roller.

Mr. O. T. Romig, Montgomery Co., Kansas, having received valuable information from the *American Agriculturist*, contributes a good plan for a home-made Field Roller. He writes us: "Take a log 6 or 8 ft. long, 18 or 20

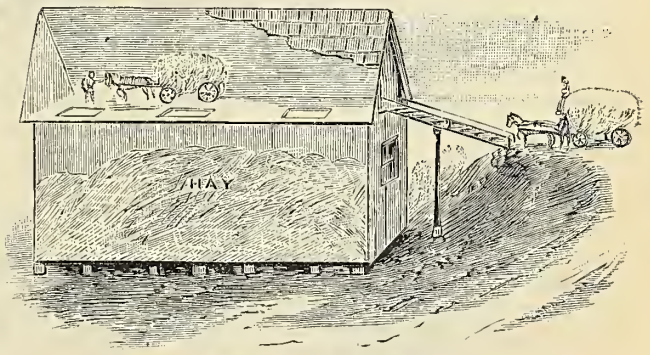


A HOME-MADE ROLLER.

inches in diameter, and put pins in each end for journals, either of wood $1^1/_2$ in., or iron 1 in. Make a frame of 2 by 4 scantlings or flat rails 3 or 4 ft. long, to suit the size of the roller. Bore holes for journals a little back of center, and also inch-holes two inches from the back end of scantlings. Fasten these ends together with a chain or rope tight enough to keep the scantlings square with the ends of the log. Fasten the front ends together with a stiff pole or rail, and put a heavy chain across the front, with one end around each front corner. Attach the double-tree at the middle of this chain. The draft chain and the pole will keep the front ends of the frame in position, and the chain behind will prevent the rear ends from spreading. When the roller goes faster than the team, the draft chain will slacken, and the front of the frame will drop and prevent the roller from striking the team. A roller is such a valuable implement, that there should be one in use on every farm. Even a rough home-made roller is better than none, whether it is used to break up clods, or to compact the soil after sowing.

Housing Hay in Norway.

Mr. G. Wankel, Mors, Norway, writes us: "As a reader of the *American Agricultruist*, I send a sketch of a hay-barn. It is no in-



HOUSING HAY IN NORWAY.

vention of mine, but is in common use everywhere in this country In order to save hand-labor in haying, the barn is built close to a rise of ground, and a bridge passable for the horses with the hay load is laid to the upper part of the building. In the farther end of the building this bridge is made wide enough for turning of horse and wagon. As will be easily understood, that the barn must be built more strongly, when it is desired to have such a bridge capable of carrying a horse and load upon it. Also the bridge itself will give additional cost. Furthermore, the horse will not be able to take a very large load of

hay up such a bridge. But it will be easily seen that this manner of building the barn saves much hand-labor. The driver has only to push the load from the wagon down into the bay, and when there it is easy to stow it away." The engraving shows the bridge.

Experiments in Keeping Poultry.

BY P. H. JACOBS, ATLANTIC CO., N. J.

The keeping of poultry in large numbers seems to be a very difficult matter, for poultry farms are rare, and farmers appear to be rather averse to such enterprises. That poultry in large numbers are as profitable as when but few are kept, has been demonstrated to my own satisfaction by carefully conducted experiments, extending over a period of over 20 years, and after many losses and disappointments, I have come to the conclusion that, no matter how favorable the conditions, poultry cannot profitably be kept in large numbers, except by division into families, not exceeding one dozen in each. This proposition I am sure can be verified by thousands of our farmers, who are aware that a larger proportion of eggs are obtained from small flocks than from large. This article is intended for farmers rather than for fowl fanciers, and while it will endeavor to show how poultry may be made profitable when bred and sold for ordinary purposes, I admit the value of all that has been done by

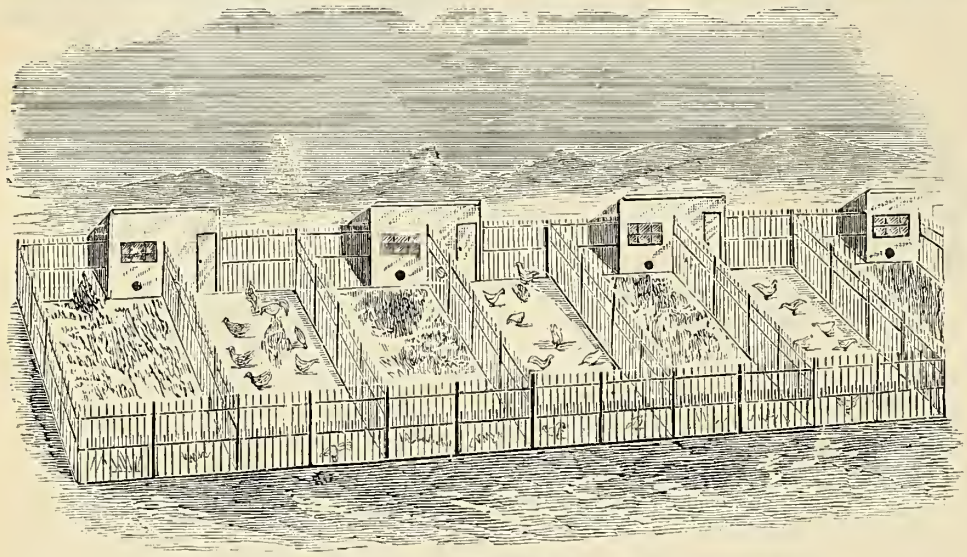


Fig. 6.—ARRANGEMENT OF POULTRY HOUSES WITH TWO YARDS TO EACH.

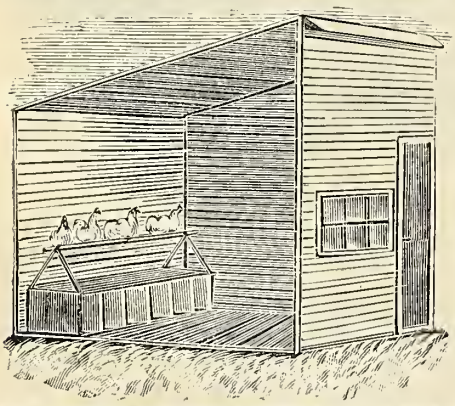


Fig. 1.—POULTRY HOUSE—EXTERIOR AND INTERIOR.

those who have been energetic in improving and perfecting the different breeds of fowls.

The Proper Size of Flocks.

With the exception of the additional labor and quarters necessary, it is as easy to profitably keep a thousand hens as a dozen, but we must at the outset give up the idea of allowing large numbers to run together at will, as the past has demonstrated such method to be erroneous. The general absence of large flocks indicates that farmers consider poultry as of minor importance, while in fact there is nothing produced on the farm that pays a greater percentage upon the capital invested than fowls. To succeed, instead of ranging in crowds, over large areas, fowls should be divided into families of about 12, never exceeding 15. Each flock must possess a poultry-house and two yards. The object of two yards is to allow of high cultivation, cleanliness, and to secure freedom from disease.

Poultry-Houses and Yards

should be as little expensive as possible, and farmers need not be alarmed at what seems

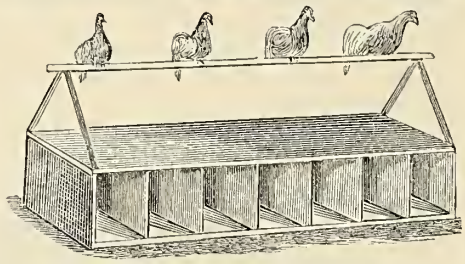


Fig. 2.—NESTS, WITH PERCH.

a great cost, as it is really insignificant in comparison with the advantages. There are many ways of erecting a cheap poultry-house, and each individual may have his own methods, which may be superior to that here given. For a cheap affair, I purchase cheap but serviceable material. For a dozen hens, a house 10 by 10 feet square is quite large, and if kept clean, 6 by 6 feet is not too small. My houses are small, being 8 feet high in front, and 5 at the back. Each house is made of weather-boarding all around, the roof being made in same manner, as the high pitch carries off all rains. Each has a door, consisting of a solid 20-inch board, and a glazed sash in front for light. The houses face the south. The top board in front is hinged, in order to open or close for ventilation. The window-sash is taken out in summer, and a wire screen substituted. The house has two openings into the yards, one of which is closed when the yard to which it belongs is not used by the fowls. The cost of such a building is about $5 for material in this section, where lumber sells for $20 per thousand. Each house has a board floor, and the nests are around the house; for a dozen fowls, a row at the back and on one side is sufficient, as seen in fig. 1, where the interior of the house is exposed by removing one of the sides. The nests are covered by a wide board, over which is a perch for roosting, as in figure 2. This economizes space. The wide board receives the droppings, and facilitates their removal, while the fowls can not injure themselves in getting on or off the roost. The floor is likewise clean, and crowding together prevented. The nests may be compared to a long box with the front taken off, the partitions being nailed to the front piece, and being separate and detachable, can be easily cleaned out. Figure 3 shows the nest when closed up and *B* represents the nest partitions, which are made to fit into *A*. The nests should be roomy; one foot square answers. With this arrangement of nests and roost, one can enter the house at any time without fear of filth, and every morning it is cleaned out, using a broom. A liberal quantity of dry earth, mixed with a little ground plaster, should always be scattered over the floor, and on the board under the roost after each sweeping. Only a few minutes are required for the work, and there is no disagreeable odor. Twice a month a good whitewashing, both inside and outside, is given, keeping away disease and vermin. A weather-boarded house is better than one stripped or battened perpendicularly, as the rain cannot enter, and it is somewhat open in summer from warping and lack of close fitting of the boards. This admits of more or less ventilation. In winter, paper the interior with two or three thicknesses of old newspapers, and the house will be warm and comfortable. On the approach of very warm weather, the paper is torn off. A coating of whitewash, to which a little glue and flour-paste is added, makes the paper lining hard and stiff.

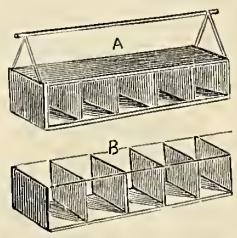


Fig. 3.—NESTS AND PARTITIONS.

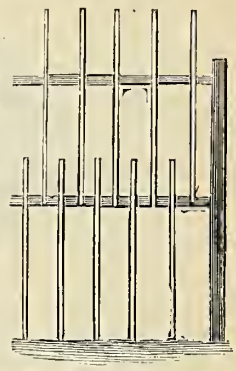


Fig. 4.—SECTION OF FENCE.

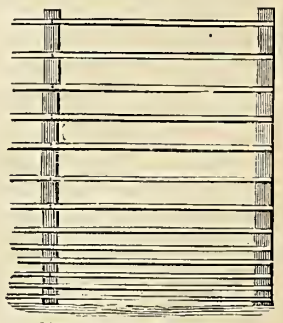


Fig. 5.—LATH FENCE.

The Yards.

The fences are made of lath, 100 of which will make 30 feet of fence, when placed about the width of a lath apart. Three strips are used, the laths being nailed to the bottom and center strip; and in order to complete the hight to 6 feet, another row is nailed to the center and top strips, as shown by a section of the fence in fig. 4. This requires, however, more laths. A cheap fence,

dispensing with strips altogether, can be made by placing posts 3 feet and 9 inches apart, and nailing the laths directly to the posts, widening the distance towards the top, as shown in fig. 5. I believe it to be an error to suppose that fowls must have nice grass runs. Two yards are recommended for each house, which the fowls can occupy alternately; this allows the poultry to run in one yard, while vegetation is growing in the other for their benefit. This is shown in fig. 6.—Other points in relation to the management will be given in another article.

Mending Broken Tools.

Farming tools, such as shovels, rakes, forks, etc., that are much used, will often, through carelessness or accident, become broken, and with most men, that means to be thrown one side, as utterly useless. By exercising a little ingenuity, they could in a short time be fitted up to do service for several years. The head of hand-rakes often becomes broken at the point where the handle enters, and not unfrequently the handle itself is broken off where it enters the head. In either case the break is easily made good by attaching a small piece of wood to the

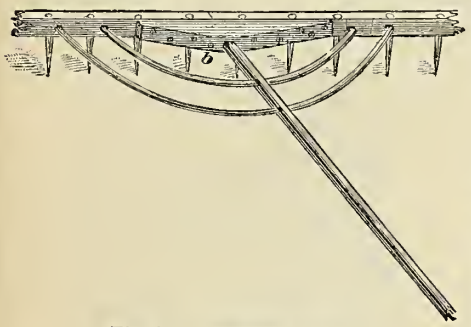


Fig. 1.—A MENDED RAKE.

head, by small nails or screws, as shown in figure 1. Should the head be broken where one of the bows passes through, it may be mended in a like manner, *b*. Shovels and spades, owing to the great strain to which they are often subjected, especially by carelessly prying with them, crow-bar fashion, are frequently broken, and usually at the point where the wood enters the blade. This

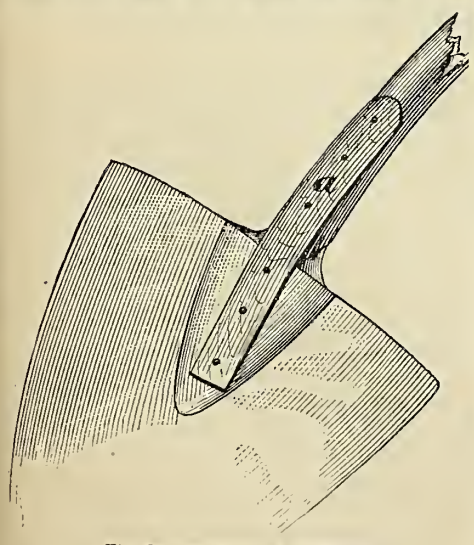
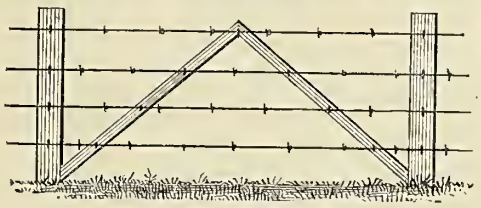


Fig. 2.—MENDING A SHOVEL.

break, bad as it is, should not consign the broken parts to the rubbish pile, especially if the blade and handle be otherwise in fair condition. Remove the iron straps or ferule from the handle; firmly rivet a strip of iron, *a*, figure 2, on top of the handle, and a similar one underneath, to the blade and handle, as shown in the engraving. Other broken tools may be made to do good service by proper mending. L. D. S.

A Wire Fence Strengthened.

Hon. Leavitt Burnham, of Douglass Co., Neb., sends us a sketch of barbed wire fence attachment, which is in use in Western Nebraska, and successfully answers the purpose of a strengthener and stiffener. As it is readily seen by the animals, it also operates as a guard to prevent stock running against the less visible wires, and receiving



A WIRE FENCE STRENGTHENED.

injury. It consists simply of rough strips of inch board, say three inches wide, extending from the base of the posts (set 8 feet apart), to a point on the top wire half way between the posts, and attached to the wires by staples. Its simplicity and easy construction make this addition to a wire fence worthy of trial.

The Laying Out of Grounds.—Friends occasionally write us, saying that their grounds comprise so many acres, and ask us to furnish a plan by which they may lay them out to the best advantage. Sometimes these requests are accompanied by a sketch of the grounds in their present condition. While desirous of aiding our readers in every practicable manner, we are obliged to decline all such requests, if for no other reason than that it is impossible for us to give the needed time to even make general suggestions in individual cases. Even when a complete map is sent us, it would require hours, if not days of careful consideration, to determine what seems to be the best plan; this it is impossible to give to any one subscriber. Besides, were we to publish a plan suited to one particular place, it would be of little or no use upon any other. It is from the utter impossibility of meeting such requests, that we decline them. There are several works upon the laying out of grounds, which discuss the general points to be observed. The best our friends can do is, to study such works, and apply their teachings to their own places. We give here one general rule to be observed: Make no road or path that is not needed, that does not lead to some point. Fix the points to be reached by roads or paths, and let these sweep by easy curves from place to place. There are many cases in which a straight road is preferable to a curved one, if so, make it. Use common sense in laying out grounds, as in all other matters, and do no unmeaning work. Always make a map of the grounds as they now are, and a plan of the proposed alterations, and work from measurement.

Substitute for Picket Fence Posts.

Mr. W. R. Sawyer, Conecuh Co., Ala., writes: "I send you a diagram of a substitute for posts in a picket or plank fence. Take a piece of good hard-wood inch-board, one foot wide, and of the length desired for hight of fence; saw it diagonally as shown by the dotted line in figure 1. After sawing, turn the broad ends together, thus giving a base two feet wide. Place the cuts for the railing of the fence, as shown in figure 2. Put a board underneath to prevent the end from sinking into the ground. I have used this substitute for fence posts and am very much pleased with it, as it is substantial, easily made, and moreover very cheap."

Fig. 1.—BOARD.

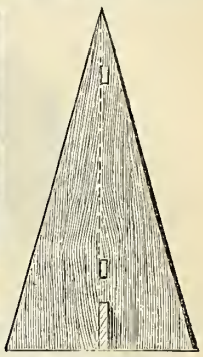
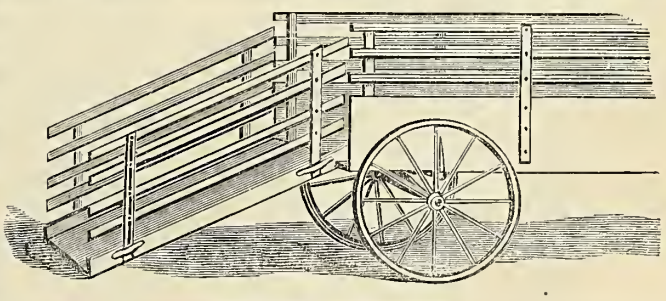


Fig. 2.—POST.

A Convenient Hog Loader.

Mr. "E. W. S.," Huron Co., O., sends us a sketch of what he calls a "hog loader" and rack for taking hogs to market. The engraving shows the "loader" attached to a wagon, with the rack. The bed-piece consists of two pine boards, 6 inches wide by 9 feet long. These are fastened together by three cross-pieces of the same material, of proper length, so that the "bed" will just fit in between the sides of the wagon-box. A floor is laid on these cross-pieces, on which short strips of lath are nailed, to prevent hogs from slipping. At one end the sides are notched to fit on the bottom of the wagon box. There are two staples on each side by which the sides are fastened on. The "rack" is made like an ordinary top-box, with the exception that each side is composed of three narrow boards about four inches apart, and nailed to three cleats (the two end cleats to be on the inside, and the middle one on the outside of the rack), and



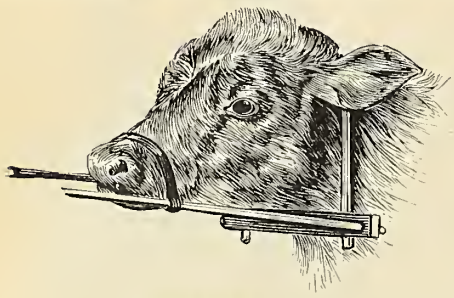
RACK FOR LOADING HOGS.

projecting down the side of the wagon-box. End-boards are made and fastened in like those of an ordinary wagon-box. For unloading the hogs nothing but the bed-piece need be used, which, being light, may be easily thrown on and taken with the wagon.

Silk Worm's Eggs.—Judging from the number of inquiries we received last spring, there are many who would experiment in raising silk worms, could they get the eggs. We would suggest to those who have eggs for sale that they make it known by advertising and do it very early next season.

A "Poke" for a Sucking Calf.

Mr. L. M. Jones, Gallatin Co., Mont., sends us the following description of a calf "poke:" "Make a bow, with a cross-piece under the neck, through which insert two sticks, to ex-

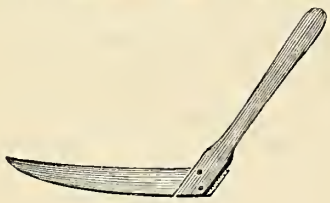


POKE FOR A CALF.

tend just beyond the nose, one on each side of the head. These side-pieces are held up by a broad piece of leather over the nose." The engraving makes the device plain to all.

A Good Corn-Knife.

Mr. Wm. R. Plummer, Huntingdon Co., Pa., uses a corn-knife which he makes in the following manner: The handle is of hard-wood 18 in. long, to which a blade made from a piece of an old scythe is fastened by rivets, as shown in the engraving. The blade is 15



CORN KNIFE.

in. long and has the back made flat by hammering while heated, so that it will not interfere in cutting.

An Experiment in Feeding Hogs.

J. N. MUNCEY, AGRICULTURAL COLLEGE, AMES, IOWA.

During December of 1881 I made the following experiment with a view to determining: first, the exact number of pounds of pork a bushel of good corn would make; second, to note the effect of heavy feeding on the constitution of healthy hogs; third, to find out the profit in feeding corn worth 50 cents per bushel to hogs worth 6 cents per pound.

Number of Pen.	*Average weight at beginning of experiment.*	*Gain of each pen for 12 days.*	*No. lbs. corn consumed.*	*Gain for each 50 lbs. shelled corn.*
B	216.7	82¾	353	13.12
C	205.9	76¾	343	12.51
E	220.6	71⅛	320	12.51
H	202.8	72	321	12.56
I	224.8	63½	343½	10.35

The conditions of the experiment were:—thorough ventilation of the hog-house; pens thoroughly cleaned twice each day before feeding corn. The shelled corn was fed in V-shaped troughs, and all that the hogs scattered on the floor was either put back into the trough or weighed and deducted from the amount consumed. The hogs were selected from a lot of 40, and it was the intention to secure uniformity in weight and appetite. Each hog was weighed separately and scales balanced each time, between 7:05 and 8:30 A. M., without feed or water. The dry corn was weighed each time before feeding, so as to avoid any possibility of error; and each lot of hogs was given all the corn they would eat.

The following conclusions were obtained from the experiment:—Dry corn is the greatest fat-producer. With but three exceptions in twenty, the gain was as much the second six days as the first six. Increased consumption of corn, attended with diminution in gain is indicative of irregularity in the functions of the digestive organs. Heavy feeding was injuring the constitution of the hogs, and could not therefore have been continued much longer, with profit. There was an actual profit of $6.99 for 12 days, on 20 hogs.

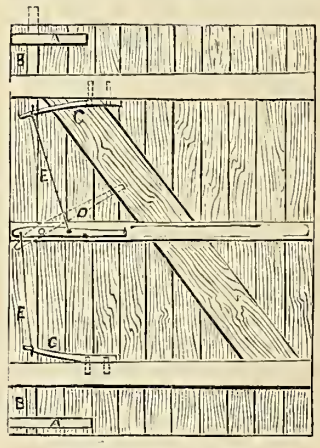
The above experiment is essentially a verification of other experiments that have been conducted heretofore for the same purpose. Some years ago an experiment was made on the Iowa State Agricultural College Farm which showed a gain of 12.63 lbs. per bushel of dry corn, and 9.87 lbs. per bushel of soaked corn; while in the above experiment the average for dry corn is 12.67, and for soaked corn 10.35. These figures compare very closely with each other. Of course the per cent. of gain will be influenced to some extent by the quality of corn and breed of hog.

Treatment of the Aftermath.

The general practice is, to feed it, or to cut and cure the rowen. It is so much money in sight, and it is hard to make the average farmer believe that anything better can be done with it. As a rule, it is best to let it lie upon the meadow to grow as long as it will, and then to protect the roots of the grasses during the winter. As long as the grass grows luxuriantly, there is an addition to the fertility of the soil in the increased bulk of the roots as well as in the tops. Any soil that yields less than two tons of hay to the acre, needs this increase of fertility, and leaving the aftermath is the best investment that can be made of it. The soil is made better, without any labor. There are, however, exceptions to the general rule. If a meadow is infested with wild carrots, or other weeds that blossom and go to seed in the late summer, and fall, a second or third mowing is probably the cheapest method of subduing them. The destruction of the weeds would be a greater benefit than the leaving of the aftermath. Sometimes farmers have unusual facilities for getting manure at very cheap rates. They live near the shore, own or lease beaches, and can cart the wrack of the sea: eel-grass, rock-weed, and other sea-weeds in unlimited quantities, at almost all seasons of the year. The principal expense is the carting. Or they have excellent muck and peat beds upon the farm, and the raw material of compost heaps, to be had for the digging and carting. Or they are near the village where wood-ashes and bones can be had for small cost, and night-soil for the carting. In these cases, where the meadow can be kept up to a yield of two and a half or three tons to the acre at one cutting, by top-dressings of sea-weed or cheap compost, it may be justifiable to take a second crop of hay. But in this case the crop should yield at least a ton to the acre, and should be cut not later than September 1st, to give time for a third growth, to make a covering for the roots in winter. Hay is among the most profitable crops in all the older States, and the aim of every farmer should be to steadily increase the productiveness of his mowing fields. "Excelsior" is a good farm motto.

A Double Latch for a Barn-Door.

Mr. D. A. Kneeland, Washington County, Vermont, sends us a sketch of a Barn-door Latch, and describes it as follows: "The main arms are 3 in. thick and of any desired width; middle arm, 2 in. thick. The pieces *a*, *a*, are 3 in. thick, and fastened firmly by nailing through the boards of the door. The sliding bolts, *b*, *b*, are 1½ in. square, with points rounded on the inside. Springs of good ash, *c*, *c*, or other tough timber, 2 in. wide and 1 in. thick at the butt, and 3 ft. long, are fastened by bolts or heavy screws. The lever, *d*, operating the springs and bolts is 3 ft. long, 1 in. thick, and 6 in. wide where bolted on. The wires, *e*, *e*, are rather larger than a pail-bail, and are fastened to the sliding-bolts and to the lever by heavy screws. The threshold of this door is the first plank of the floor, and slanting outward. A mortise is made to receive the sliding bolt, and a piece of tin or sheet-iron is bent and nailed on, to make a smooth place for the bolt to slide upon and to prevent the part from wearing. A similar mortise and inclined plane are made in the door-cap. A wooden pin under the long arm of the lever guards against breaking the springs by bearing down too hard. In using the latch, press down the lever and push open the door. In closing, let go of the lever and swing the door back, when it is instantly fast-



BARN-DOOR LATCH.

ened at top and bottom. This latch cannot warp or get out of shape, and a child can open or shut it." The engraving shows the latch ready for the door to be opened.

Keeping Eggs.—Perhaps more than the usual number of inquiries as to preserving eggs until the time of high prices, has come to us this eason. This is probably in part due to the great pretensions of the "Ozone" chaps, who claim that eggs may be preserved very cheaply by their process. As this so-called "Ozone" is nothing but Sulphurous Acid, produced by the burning of sulphur, while it may preserve the eggs, we do not believe that it can be used without imparting to them an unpleasant flavor. All the methods for preserving eggs now in use depend upon the fact that the shell is porous, and if these pores can be so closed as to prevent the access of air, the contents of the shell will remain good for a long time. There are two principal methods. One is, to smear the surface of the eggs with something that will close the pores, and then pack them in some material that will practically exclude the air. The eggs are smeared with lard, coated with Linseed or Cotton-seed Oil, or with Shellac Varnish, and are after-

wards packed in bran, dry sand, or other similar material. These methods will answer for home use, but whatever may be the coating material, the surface of the shells will have an unnatural appearance, which will prevent their ready sale in the markets. So far as we are aware, the only practical method to preserve eggs to be sold, is to place them in Milk of Lime. Lime is slaked and prepared as for white-wash and the eggs are covered with and kept in this, until wanted for market. The eggs, according to the extent of the operations, are placed in barrels or in brick vats built for the purpose. Some recipes advise the addition of Cream of Tartar to the Lime-wash, but this is of doubtful value. The eggs when sent to market are removed from the lime and thoroughly washed, and when dry are packed in barrels of cut straw, like other eggs. In the N. Y. market they usually bring about five cents a dozen less than fresh eggs.

The Southern Cow Pea, and Its Uses at the North.

Some ten years ago, finding that the Cow Pea, so important in southern agriculture, had no recorded history, we undertook to investigate it. Through the kindness of friends in several Southern States, we received samples under more than thirty *different names*. These were reduced, by classifying them according to the size and color of the seeds, to twenty distinct varieties, ranging in size from that of the ordinary "Marrow" white bean down to some much smaller than a pepper-corn. The colors ran from dead white, through yellow, red, and purples, with variously marked kinds, to black. Some of these are cultivated in the South as table varieties, but the majority are of value as farm rather than as garden crops. It may be added that the plant is not properly a pea (*Pisum*), nor is it a true bean (*Phaseolus*), but it belongs to the tropical genus *Vigna*, and the numerous varieties are probably forms of *V. Sinensis*, of the East-Indies. As to the method of introduction of these generally cultivated plants, we have as yet no definite information. To the southern farmer this pea (the name being well established, can not be changed even if incorrect) is as important as is clover to the northern farmer. As a green manure, as a green fodder, and made into hay, it is in each case of the greatest value. Within a few years the attention of Northern farmers has been drawn to the Cow Pea, as shown by the fact that some seedsmen offer them in their catalogues, as well as by the inquiries that come to us by letter.

There are two uses for which this pea may be of value in the Northern States—as a green manure and as a green fodder, or soiling crop, either directly from the field, or in the form of ensilage. For these uses, it does not matter if the seeds will not mature in the Northern States, as a supply can always be had from the South. It is not likely that it will be of much value in the North as a hay crop or for human food. As a crop to plow under it has the advantages of quick growth and of producing a heavy mass of vegetation —indeed, almost too heavy, it being sometimes difficult to turn it under, a peculiarity that however does not detract in the least from its value as a soiling crop.

The varieties most esteemed in the Southern States for plowing under are the "Clay," "Black," and "Whippoorwill," and these are the kinds offered by Northern seedsmen. These will grow on very poor soil, and in the Southern States two crops are grown in a season, which will not be practicable at the North where the season is shorter.

Wherever the Cow Pea is tried, it should not be sown before the ground becomes warm and the weather settled. Being a tropical plant, it should not be put into the ground before "corn-planting time." For all but the poorest lands, one bushel of seed to the acre is the usual quantity, but on very poor soil six pecks are used. The seed is sown broadcast on plowed land, and turned under with a light furrow and harrowed in.

The Proper Treatment of Pears.

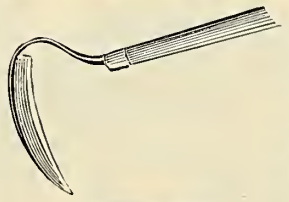
Many who have planted pear trees, fail to have the fruit in its best condition; supposing that it is not mature until it is mellow, they allow it to hang until it is soft. We know no exception to the rule that pears should be ripened off of the tree. After a pear has made its growth and matured its seeds, it rests for a while. Sooner or later decay begins; the first step in this is for the flesh to become soft and juicy throughout, a mellowing, and this is when it is in eating condition; the next step is actual decay or rottenness. The time between complete maturity and the mellowing varies greatly in different varieties, from a few days to, in the winter pears, several months. When the fruit is mature, it makes preparations for dropping. The hold upon the tree is gradually loosened, a line of demarcation, a joint, so to speak, is found where the stem joins the twig. A short time before the pear could not be picked without using force and breaking the stem; when mature, merely raising up the pear to a horizontal position will rupture the slight hold its stem has upon the tree, and it will break off with a clean, smooth surface. This, the readiness with which the stem will separate, is the best test of maturity; when the hold is so readily broken, the fruit can receive no more from the tree, and the sooner it is gathered the better. In picking, merely lifting the pear to a horizontal position will cause a separation, and make the task easy. Where there are many pears, it is well to have a fruit-room, with shelves upon which they may be laid and can be easily inspected. Exclusion of the air appears to aid the ripening, and drawers or shallow boxes are preferred to shelves. Unless a very dry one, a cellar is not so suitable as an upper room. The finest-colored pears we ever had, was where the fruit was spread upon a blanket and covered by another. Winter pears should be kept as cool as possible in barrels or boxes, treated, in fact, just like winter apples, until needed for use, when a few at a time may be placed in a warm room to finish and mellow them. The importance of gathering as soon as full-grown is seen in Clapp's Favorite; when picked early and carefully kept, it is one of the most beautiful of pears, and of good quality. If left on the tree until mellow, it will be rotten at the core and utterly worthless. The universally popular Bartlett is ordinarily second-class as to quality, but by picking very early and carefully ripening, it is so much improved as to seem like another variety.

Leaves for Bedding.

In the scarcity of rye straw, and the absence of saw-dust, and other material for bedding cattle, we have been forced to use forest leaves to keep the horse and cow in cleanly condition, and on the whole are much pleased with them. The gathering was from the road side, and along the walls, where brush and leaves had accumulated for years. A few basketfuls were put under the animals every morning, and kept there until they were well saturated with the urine, and then thrown out into the manure heap. With a plenty of this material, kept dry under a shed, and used abundantly, there is very little loss of liquid manure. As an absorbent, it is much more effective than we expected to find it. Leaves have a high reputation as a material for the hot-bed and the compost heap, and are worth the labor of gathering, in most cases for their fertilizing properties. Cords of them are going to decay in the sight of almost every rural home, and it is the rare exception that they are utilized. Meanwhile the fields and garden are famished for want of manure, or supplied with concentrated fertilizers at forty dollars a ton. C.

A Home-Made Hoe.

"Reader," Worcester Co., Mass., saw in the June *American Agriculturist* (1881) a description of several useful tools made from old scythes, and sends us a description of a hoe made from an old scythe. He writes: "It is the best tool I have ever used amongst small vegetables in the early part of the season. Take 18 inches of the point-end of the scythe, cut the blade from the back, leaving 6 inches of the point; heat and bend it into the shape shown in the engraving, so it will hang right, and drive it into an old hoe handle. Large weeds can be pulled with it by forcing the point down close to the weed, and pulling gently on both until the weed gives way. It is also a useful implement for the women to use in their flower gardens."



A USEFUL HOE.

Destroying Wild Carrots.—The carrot is one of the most troublesome weeds with which the farmer has to contend. It is so hardy and prolific, that in some of the States laws have been passed for its suppression. If neglected, it will spread over pastures and meadows, and take possession of the road sides. They do not show themselves much in the early part of the season, but after the mowing in June and July, they shoot up rapidly, and show their white blossoms in every direction. Some farmers seek to destroy them by pulling them up by the roots, an effectual, but very expensive process. The plant is a biennial, and if it is not permitted to scatter its seeds it can just as surely be eradicated by mowing, while in blossom, or any time before it drops its seeds. There is little danger of leaving it until August, or early in September. If cut before seeding, the plants may be left upon the ground. If later, gather into heaps and burn, or put into a compost heap.

Hemp and Hemp-Seed.

Numerous inquiries indicate a renewed interest in Hemp Culture, though a share of these have in view the production of the seed rather than the fibre. The method of cultivation is quite different. To produce the finest fibre, the plants need to stand closely and bear but few and small branches; in raising seed, the plants must have room to develop and to produce numerous strong branches.

Fig. 1.—HEMP—FEMALE AND MALE PLANTS.

Hemp is affected by soil and climate to a remarkable degree. It requires in all cases a strong soil, and if allowed to ripen its seeds is an exhausting crop. It does not do so well on new land; hence other crops are raised for a few years before growing hemp upon it. In this country the plant grows about 8 feet high, but in southern Europe it grows to 15 and even 20 feet. The most singular effect of climate upon the plant is seen when it is cultivated in India. There the plant produces a resinous matter which exudes upon the surface of the stems and leaves. This has powerful intoxicating qualities, and is the active principle of the *hashish*, used in the East to bring on a state of unconsciousness, accompanied by blissful dreams. The Indian Hemp was for a long time supposed to be a distinct species, but it is in no other respect different from the common plant, and the seeds of the Indian plant, when sown in a northern climate, produce only ordinary hemp, without any of these marked properties.

When cultivated for the fibre, the seed is often sown broadcast; but it is better to sow in drills, as the plants can be cultivated while young. They soon become large enough to keep down all weeds. From four to six pecks of seed to the acre is the usual quantity; but sometimes, when a fibre of unusual fineness is desired, two bushels are sown.

In raising Hemp-seed, the land is well manured, and the seed planted in hills three and a half feet apart each way, sowing a dozen or more seeds to the hill. The crop is cultivated with plow and hoes, the same as corn. At the first hoeing the number of plants is reduced to six in each hill, and at the last working, when the plants are about 18 inches high, they are thinned again, leaving only three in the hill. The hemp has staminate and pistillate, or male aud female flowers, in different plants. One staminate plant, or "blossom plant," as the planters term it, produces sufficient pollen to fertilize several pistillate or "seed plants." As there is an excess of these, a share is pulled as soon as they can be distinguished. The difference in appearance between the two sexes is seen in figure 1. The pistillate flowers are in dense leafy clusters, while the staminate are in open panicles. These are more distinctly shown in figure 2. The usual method is to cut out all the staminate plants save one in every other hill in each alternate row. After those allowed to remain have shed their pollen, which may be known by their ceasing to yield a dust when shaken, they are to be pulled. When a share of the seeds are ripe, the plants may be cut or pulled, tied in convenient bundles, and placed in stooks until all are ripe, when they are threshed out with a flail. It is best to use a barn-sheet or other cloth upon which to lay the bundles while threshing. Hemp-seed contains about one-fifth of its weight of oil; the chief consumption of the seed, aside from that used for planting, is as a food for cage birds.

Hens in Confinement.—It is a common notion that hens kept in yards during the summer and fall cannot be made profitable. It is true, they will not lay as well as with a free range about the premises. But with proper food and restricted freedom, the hens will lay fairly, and three-months-old chickens will grow about as fast as in perfect freedom. They should have an hour's run before roosting time, to get grass and insects, with a little watching to keep them out of young plants and the ripening fruits. They want large, roomy yards, with regular attention, and feed, every day, by one person, who is responsible for their welfare. The principal feed of laying hens should be early in the morning—a variety of grain, and about as much as they will eat. For green food, give any vegetable waste from the garden, and keep this always by them. For animal food we have never found anything better than sour milk. Clean water should be kept in the yards and be renewed regularly every day.

Increasing the Value of the Cotton Crop.

Before the war a large share of the Cotton Seed was a waste product. Aside from that needed for planting, some little was used as manure, but the great bulk of it was thrown away. At present cotton-seed sells readily in Louisiana at $12 to $15 a ton, and sometimes higher. Good judges estimate that the value of the cotton crop has been increased about one-third, adding to the income of the cotton-growing States not far from $100,000,000, annually. The production of this vast sum from a heretofore waste product is due to the inventors of machinery. The seed has a coat of fine lint which the gin does not remove. This is now taken off and utilized, and the shell of the seed is left perfectly smooth and ready for hulling. The huller cracks the shell, liberates the kernels, and discharges the hulls. The hulls or husks are of value as a fertilizer, especially after they have been used as bedding for animals. The kernels are pressed, to extract the oil, the most valuable product of the seed. The cake left in the press after all the oil possible has been extracted, is still a rich food for animals, especially cows in milk; this is ground, and as "cotton-seed meal," meets a ready sale—especially abroad, a large share being exported. The crude oil from the press is clarified, and the residuum from this process is used in making soap. The finished oil can with difficulty be distinguished from the best olive oil, and may be used for the same purposes, including salad dressing. The oil is coming into use in southern families as a substitute for lard in frying, etc., and the coarser kinds for burning and soap-making. That it is much like olive oil is shown by the fact that the best markets for cotton-seed oil are found in those countries which produce the most olive oil. We have been much interested in the development of this important southern industry, and in 1877 described a new huller which has since contributed much to its advancement. We certainly have a great advantage over those countries which must grow the Olive, Rape, Bene, and Poppy, expressly to produce oil, as we have at hand a material from which to produce it, which, in one sense, costs nothing. It is said that there are now about 70 oil mills in operation.

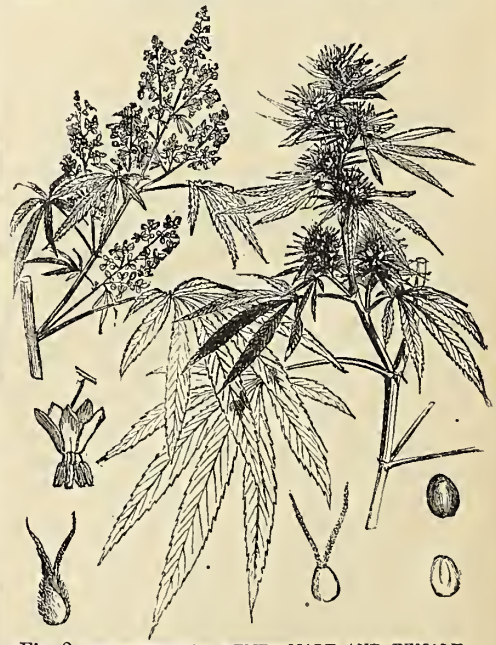


Fig. 2.—FLOWERS OF HEMP—MALE AND FEMALE.

The "Sword Lily"—Gladiolus.

If there is a plant that deserves to be popular, it is the Gladiolus or "Sword Lily." It is showy in the garden, and when the spike is cut, its flowers will remain in perfection longer than most others. The spikes, a foot or more long, are closely set with the flowers.

THE GOLDEN-PURPLE AND DRAGON'S-HEAD GLADIOLUS.

THE DOWNY OR HOARY SKULLCAP.

And in what a variety! From pure white through all the yellows on one side; from the palest blush, through many shades, to the most intense of scarlet; and added to these "self colors" there is a wonderful variety of markings, blotchings, and shadings producing the most brilliant effects. But the expense?—If one wishes the choice, new, named varieties, they will cost from 25 cents up to $3 each, and are often worth all they cost. But our desire is to popularize the Gladiolus, hence we advise the beginner to start with unnamed varieties; fine "mixed varieties" may be had at a dollar a dozen, and in large quantities for less. Very satisfactory kinds may be had at this low price, and the beginner can learn about the plants and make his future purchases knowingly. The ease with which the Gladiolus is cultivated commends it. Plant in spring in good soil, at intervals of a week, until the middle of June, and a long succession of bloom may be had. The soil, while good, need not be over rich; do not crowd the bulbs—a foot between them is none too much, and in planting, let the top of the bulb be four (in very light soil, six) inches below the surface. The flower-spikes are very heavy, and it is well to give each a support; a willow or other stick can be thrust into the ground and the spike tied to it in such a manner as to completely conceal it. In autumn, before the ground freezes, the bulbs are to be taken up; they should be lifted with care, in order to save any little bulbs that may be attached. Let the bulbs, with such leaves as may remain, be exposed all day to the sun, then take them to an airy room and allow them to remain several days until the dry exterior shows that they are well cured. Cut off the top and keep the bulbs in winter in a cool, dry place where they will not freeze.

The Gladiolus is propagated from seeds, and by offsets from the old bulb. It is only to obtain new varieties that seeds are sown; the usual method is from the offsets. The bulb that is planted dies; in autumn it will be found in a withered state, with a new bulb by its side; sometimes there will be two, three, or more new large bulbs, and often a host of small ones, the size of a pea or less. These little bulbs, if carefully saved and cultivated for a year or two, or more, will make blooming bulbs; in taking up in fall, these bulblets should be looked to, and those bulbs which have them should be laid on paper to dry.

Our remarks thus far apply to what are known as the French Hybrid Gladiolus (*Gladiolus gandavensis*), the real origin of which is not precisely known. These present a great number of varieties, and are generally so fine that cultivators seem to forget that there are any others. There are a number of distinct species, some of them are quite as fine and as worthy of cultivation as the better known and more popular French Hybrids. We have cultivated several of the species this year with much interest. The Free-flowered Gladiolus (*G. floribundus,*) is one of the oldest of all; the bulb is quite small, and in ordinary winters hardy, but it is safer to take it up. While in most kinds the flowers form a one-sided spike, in this they are on both sides of the stem, erect, rather regular, and of a light pink, with darker markings.

The Gold and Purple Gladiolus (*G. purpureo-auratus,*) is comparatively recent; while it does not warrant the high claims made for it when first introduced, it is a neat and distinct species, and has, when crossed with others, produced varieties handsomer than itself, especially the one called "Marie Lemoine," which we have also flowered. The flower stalk is very tall and slender; the flowers somewhat nodding, pale yellow, (hardly "golden,") with two broad purple blotches on the lower divisions. It is the few-flowered one at the left in the engraving. The other is the Dragon's-head Gladiolus (*G. dracocephalus*), the flower in profile having some resemblance to the head of an animal. The color is bronzy-yellow, more odd than brilliant. The flower in this is large, and has great firmness or substance, qualities that will be useful in hybridizing.

The Skullcaps.

The Skullcaps derive their name, as well as their botanical designation (*Scutellaria*) from a peculiarity of the calyx; after the corolla falls, the mouth of the bell-shaped calyx is closed by an appendage (*scutella*, a dish) which gives the whole a resemblance of a tiny hel-

met. There are nearly 100 species of *Scutellaria* found in the temperate parts of the world, of which over 20 belong to the United States. While many are small and weedy in appearance, a few are sufficiently showy to rank among ornamental perennial plants. The Downy (or Hoary) Skullcap, *Scutellaria canescens*, grows nearly the whole length of the Atlantic States, and as far west as Illinois, but is more abundant southward. This has a branching stem two to four feet high, and leaves and flowers of the shape and size shown in the engraving. As the name indicates, the plant is usually covered with a fine, soft, whitish down, which gives it a hoary appearance, though this often almost disappears, and the foliage is dark-green. The flowers are of a peculiarly clear light-blue, to which a small white spot upon the lower lip of the corolla gives a peculiar brilliancy. Though individually small, the flowers are produced in such abundance that the panicle is quite showy. As a plant to grow among spring-flowering shrubs or in the wild garden, we are much pleased with it. It blooms in August, at a time when flowers are scarce, and gives us a clear, lively blue, a color which is not common at any season. Two or three low-growing Skullcaps, from Japan and Europe, are in cultivation as pleasing rockwork plants.

The Care of House Plants.

With the improvements in the heating of houses, the culture of plants in our dwellings has greatly diminished. Most persons can recollect plants that had been cultivated from year to year so long that they seemed to be members of the family. Grand old Lemon-trees, fine specimens of Laurestinus and Pittosporum are now rarely seen in house culture, and the Ivy, capable of such varied ornamental uses, is becoming uncommon. When our dwellings were heated by open wood fires, the chief care needed by the plants was to protect them from the cold. At present this is the least of our troubles, but others have come in its place. Still, even under all present disadvantages, plants may be successfully cultivated in the windows of the dwelling, if a few simple directions are followed. One great enemy to house plants is

DUST.—If there are plant shelves at the windows, or the pots are placed upon a table or stand, contrive some cover for them at sweeping time. This may be, for plants on shelves, a curtain of some light material—the lighter the better, to be suspended in such a manner as to cover them. If the plants are on a table, contrive an upright post or stick to be set in a hole in the middle of the table, to hold up the center of a spread of some kind that will cover the plants. In the absence of such protection, contrive some method of using old newspapers. Before sweeping, protect the plants by the use of a covering, and let this remain over them until the dust has completely settled.

All smooth-leaved plants, especially Ivy, Camellias, Cape-Jessamine, and the like, should have their leaves washed with a soft sponge—a rag will answer—on both sides, with tepid water, at least once a week. If this is once tried, it will be found much less trouble than one would suppose, and the increased beauty of the foliage will lead to its repetition. Rough-leaved plants, such as Geraniums, and many others, cannot be washed to advantage. Set these in a bath-tub, or in a sink, and give their leaves a good drenching by using a garden syringe if one is at hand, or else a watering pot, one with fine holes, holding it up high so that the water will fall with force upon the leaves. After dust, the great trouble with house plants is,

INSECTS.—If one allows these to get the mastery, the case is difficult; but if the plants as soon as brought indoors have proper attention, insects need give but little trouble. The three great remedies for insects upon house-plants are—The Fingers, Tobacco, and Water. One who loves plants and watches them, will note the first appearance of Scale, Mealy-bug, or other insect large enough to be readily seen, and remove it. Scale may be readily removed by a blunt knife, and Mealy-bug may be picked off by a match whittled to a point. Keep a supply of tobacco-water made by pouring boiling water upon tobacco-stems or any cheap kind of tobacco. When used, this is to be diluted, as the rule goes, "to the color of boarding-house tea." Diluted in this manner it may be showered upon plants infested with plant lice. Preferably, it may be placed in a keg or tub, and the plants infested with insects dipped in it for a few seconds, moving them gently about. The most troublesome of all insects in dry rooms is the Red Spider, a minute mite which attacks the undersides of the leaves. When the leaves of a plant turn brown, Red Spider is the probable cause. A frequent application of water, as mentioned under Dust, is the remedy. In this case, lay the pots on their sides so that the water will reach the under surface of the leaves. Another lack of success with house plants is

TOO MUCH WATER.—If a plant is not in flourishing condition, the common remedy is water, and it is watered again and continuously until the soil in the pot is merely mud, in which only the roots of aquatic plants can live. Vastly more house-plants are injured by too much than by too little water. There is but one rule for giving water to house-plants, that is—give water when it is needed. There should be no indiscriminate daily watering, drenching all alike. It is far better for a plant to occasionally get a little dry, and for its leaves to flag and droop, than to keep its roots soaked by an excess of water. The soil in the pots of house plants should be moist, like that of good garden soil just below the surface. If in this condition, no more water is needed. One by observing the soil, its color, and the manner in which it feels when pressed by the finger, can soon learn to judge whether water is needed or not. Another frequent trouble with house-plants is

WORMS IN THE SOIL.—Every one who cultivates house plants should learn to readily remove the ball of earth from the pot, so that it can be inspected. By exposing the ball, the large earth worms may often be seen upon its surface, and can be picked off. These, as well as smaller worms that sometimes infest the soil, may be readily killed by the use of lime-water. Slake a piece of lime as large as the fist in a pail, and when slaked, fill the pail with water, stir, and let it rest. Use the perfectly clear water upon the soil in the pots.

By observing these precautions as to dust, insects, and watering, the window cultivation of plants will be comparatively easy. Not only for the health of the plants, but of that of the inmates of the dwelling, the air, however heated, should be moistened by proper provision for the evaporation of water.

Even in localities where winters are severe, there are not many days in succession in which the window may not be opened for a short time in the middle of the day. All such opportunities for giving the plants fresh air should be utilized, and what is good for the plants will not injure those who care for them.

The Improved Dandelion.

Dandelion, while common in fields and road-sides, is a plant rarely seen in our gardens. It as well deserves a place among our cultivated plants as some that are generally grown. We do not, of course, refer to the common wild Dandelion, but to the plant as it has been improved (*amélioré*) by the French.

Fig. 1.—WILD DANDELION.

There is nearly as much difference between the Improved Dandelion and the common wild plant as there is between a fine Orange Carrot and the wild Carrot, so abundant as a weed nearly all over the country. The engravings show the relative size and difference between the two plants, the Wild and the Improved. The contrast is interesting, as showing what may be done in a few years with a common wild weed by successive yearly sowings of seeds from the best developed plants. Not many years ago Vilmorin, by a similar course with the Wild Carrot, and Carrière with the Wild Radish, produced valuable varieties from plants that are both mere weeds. With good culture, the Improved Dandelion will

Fig. 2.—IMPROVED DANDELION.

form dense tufts of large, succulent leaves, 18 inches or more across. The French use Dandelion as a salad, first blanching it by tying up the leaves, or by other methods used for Endive. We have cultivated it for several years especially to use for "greens," and would not willingly be without it.

The seed may be sown in rows two feet apart, and when the plants become crowded, they should be thinned to 12 or 15 inches in the row. The thinnings may be used if desired; the remaining plants are to be cultivated during the season. The seeds may also be sown in a seed-bed and the plants, when large enough, transplanted, setting them at the distances above mentioned. The principal seed stores have the seeds of the Improved Dandelion. When the ground freezes it is well to put some litter between the rows, not for protection from cold, but to keep the leaves from being soiled. In spring, after the growth

has made some progress, the leaves may be cut, taking care to leave the central tuft to grow; several successive cuttings may be made the same season, and the plants will last for several years. When used for salad, the whole tuft or crown is cut, the center being tenderest; as this prevents future growth, the plants must be renewed annually.

Introducing Weeds.

That some very troublesome weeds were scattered over the country by having been at one time in cultivation in the flower garden, we have a marked illustration in the Toad-flax or "Butter and Eggs" (*Antirrhinum vulgare*). This is very common along the roadsides in many parts of the country, and when it gets a foothold in a pasture it stays there. This is probably the most widely distributed weed that was thus introduced. Some plants do not scatter so widely, but spreading by the root from the place where they were planted, in time they take possession of a wide area of the garden, coming up where they are not wanted and in most unexpected places. A few years ago a friend gave us a specimen of "Birthwort" (*Aristolochia Clematitis*), an interesting, but not very showy plant. If it were not annoying, it would be amusing to see the strange places in which the plant makes its appearance anywhere within 10 or 15 feet of the spot where it was first set. Its last freak was to make its way up through and show itself upon the top of a rock-work. The Bocconia (*B. cordata*) makes a stately clump, throwing up stems six feet high, with handsome leaves of a peculiar green. We would not advise any one to plant it, unless they wish to have that particular plant in that particular place continuously. It is one of the most difficult things with which we are acquainted to get out of the ground, on account of its brittleness, and the least fragment left in the soil will grow.

The Giant Knot-weed (*Polygonum cuspidatum*) is another comparatively recent comer, which was much praised when first introduced. It is a plant to be let alone unless it can be put in some wild place where it may spread widely and occupy the soil. Those who introduce new plants should tell us of their bad as well as their good qualities.

Abortive or "Bladder" Plums.

PROF. W. A. BUCKHOUT, STATE COLLEGE, CENTRE CO., PA.

About the middle of June a friend asked me to look at a tree which bore a very peculiar fruit, unlike any with which he was acquainted. The tree, closely shut in by an old privet hedge and some Norway spruces, was unmistakeably a wild plum of some sort, but the fruit was an oddity. Instead of the well-formed plums which should be shown even thus early, there were numerous almond-shaped, bladdery looking things which were very soft and flabby. When opened, no stone was disclosed, but in place of it a small spongy body, borne upon a long and slight stem grown fast to the inner wall, and extending down to the base. The walls were thin, but yet showed slightly the peculiar shallow groove, or "suture," so characteristic of the plum and the peach. Of course such fruits were not edible; and after a few weeks they began to shrivel and to turn black, and by the middle of July they had all fallen.

Similar monstrosities have already been recorded. Dr. Masters in his "Vegetable Teratology" figures what he terms "Bladder Plums." He represents them as about three times as long as broad. In the "Gardener's Chronicle" (Eng.), June 22, 1867, mention is made of cultivated plums similarly developed.

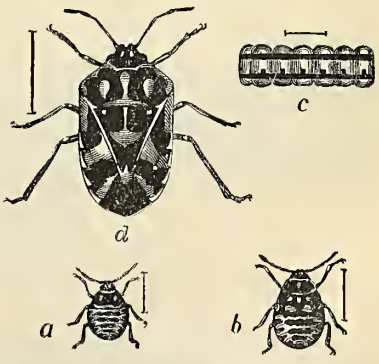
Those shown in the accompanying engraving were but little longer than broad. The tree is, probably, our common Wild Plum (*Prunus Americana*) judging from the description of those who in former years had often gathered fruit from it. This fruit is, of course, inedible, but its occurrence is interesting: we can still trace in it the structure proper to the normal fruit. The bladdery skin, or envelop, is that which ordinarily becomes the thick, juicy flesh of the plum. The little spongy mass, slightly attached to the interior, represents the ovule, which, ordinarily, would perfect as the "meat" or seed proper. The stone, so characteristic of the plum and related fruits, is entirely lacking. Why there should be a failure to deposit the material of the stone is not known. Any attempt to account for the phenomenon, until the tree can be carefully watched from the time of blossoming, would be useless.

BLADDER PLUMS.

Autumn Sowing of Flower Seeds.—We have heard persons say that the finest flowers they ever had of certain annuals were from "volunteer" plants from self-sown seeds. The real reason for their superiority is not due to the manner, but to the time of sowing. Seeds are "self-sown" soon after they are ripe, and the superiority of the plants from these suggests autumn sowing. The annual flowers classed as "Hardy" should, as a general thing, if practicable, be sown in autumn. Larkspurs and Pansies are incomparably finer when thus sown; Clarkia, Whitlavia, Gilia, and nearly all the rest of the California annuals, to give the best results, should be sown in autumn.

The Harlequin Cabbage-Bug.

When the Harlequin Cabbage-bug was first brought to our notice about eight years ago, it was but little known. This year the number of specimens sent us, show that it is unfortunately increasing, especially in Kansas and Nebraska. It was for some time known only in Texas, and hence was called the Texan Cabbage-bug. Heretofore the worst enemies of the cabbage crop have been the Cabbage-worms, the caterpillars of several butterflies, and moths. This Harlequin-bug, which seems to be more destructive than all the others, is not a beetle, but one of the true bugs, of the same order as the mischievous Bed and Chinch-bugs. The engraving will allow of the identification of the insect; *a* and *b* are its larval and pupa states, and *d* the perfect bug, the lines at the side showing the real size. The colors are black and orange. These are arranged somewhat in the manner of the colors in the dress of the theatrical harlequin; hence the common name, and the specific scientific name—*Strachia histrionica*. The eggs, *c*, are shaped like a miniature barrel, of greenish-white color, with black bands representing the hoops. These are placed on end in two rows, in clusters of about a dozen, and attached to the underside of the leaf. In four to six days the young insects remove the upper head of the tiny barrel and begin their mischievous work. There are probably several broods in a season, and the last passes the winter in the perfect state. In Texas the first eggs are laid about the middle of March, but later in northern localities. The bug does not confine itself to Cabbage, but feeds upon the Raddish, Turnip, Mustard, and many others of the Cruciferous Family. The accounts of its ravages are most discouraging; it is said that half a dozen of the grown insects will kill a cabbage in a single day. The insects live by sucking the juices of the plant through their beaks; the accounts state that their puncture poisons the cabbages, etc. Birds and domestic fowls do not touch them; nor has any other insect been observed to attack them. The late Dr. Lincecum, of Texas, and others who have published their experience with the insect, agree in stating that all other methods of destroying it, save hand-picking, failed, though they do not say what others were tried. We suggest the thorough trial



HARLEQUIN CABBAGE-BUG (*Strachia histrionica*).

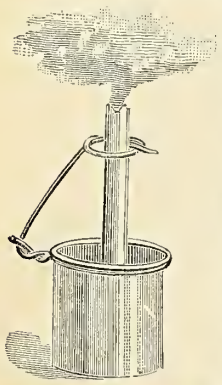
of Pyrethrum powder (the Persian Insect Powder) which may be used without danger. The powder itself may be sprinkled upon the plants, and it may be used in infusion, a strong tea being made of it. If any have successfully destroyed this pest by the use of Pyrethrum or in any other manner, save hand picking, they should make it known at once.

THE HOUSEHOLD

Killing Mosquitoes with Pyrethrum.

Some months ago we mentioned the use of Pyrethrum, or "Persian Insect Powder," for the destruction of insects. It was stated that in France the powder was made into pastilles, to be burned in rooms, in order to kill mosquitoes by the smoke thus produced. Our long-time correspondent, M. Jean Sisley, Lyons, France, upon reading this article, sent us his method of using the Pyrethrum powder for mosquitoes. He says:

"I take a small pomatum pot, round the top of which I put an iron wire, and at the upper end of this I make a ring to hold a cartridge or cigarette. This cartridge I make by rolling a piece of paper of about six inches long by two inches wide round a common lead pencil. I twist the paper at one end, and then put in the Pyrethrum powder at the other end. The powder is added in small quantities at a time, and pressed by the pencil. When the cartridge is full, it is twisted at the top, and put in the wire ring, as shown in the engraving. Thus prepared, the affair is set upon the mantel shelf of the bedroom, and the cartridge lighted an hour before going to bed, the doors and windows being shut. One charge of this size will do for a small room of 9 or 10 feet square, but for a larger room two or three must be used. The paper for the case should be thin, and burn easily, and the powder must be very dry, in order to burn well."



PYRETHRUM CIGARETTE.

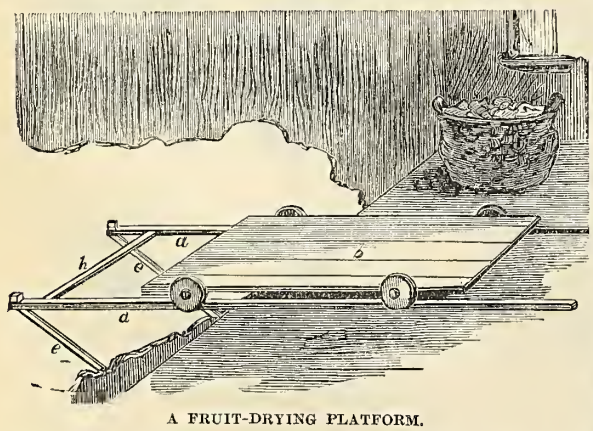
The pomatum pot is used as a support for the burning powder, and to prevent accidents from fire. Of course any other vessel that will answer these purposes may be used instead. We would suggest as a still simpler way, to fill a cup or other vessel with dry sand, and insert the lower end of the cartridge or cigarette in that.

Useful Household Devices.

BY L. D. SNOOK, YATES CO., N. Y.

A Neat Fruit Drying Arrangement.

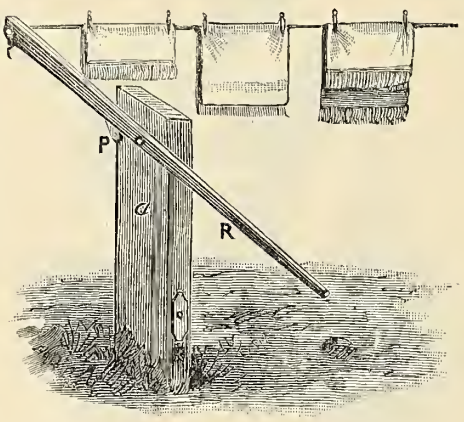
The best way to dry fruit, is by artificial heat, but farmers and others who have but little fruit, are not able to purchase a fruit dryer. The usual method of drying apples, is to build a frame out of doors, cover it with boards, upon which the fruit is spread. During inclement weather, the fruit is usually only partially protected by a covering of loose boards. The following describes a good fruit drying arrangement. It should be located in the south side of the second story of the wood-house, wash-house, or even in the corn-house, or other convenient out-building. A space eight inches high, and five or six feet in length, is cut in the south side of the building, level with the floor; upon the floor are nailed two light scantlings, *a*, *a*, projecting beyond the building six or eight feet as desired. The ends are connected by the strip *h*, and supported by the braces *e*, *e*. Upon this track runs the platform, or drying board, *b*. The wheels may be of either wood or iron, and run in grooves, or in any way desired. When the platform is within the building, it is easy of access, and perfectly dry, and can be easily pushed out along the track to receive the direct rays of the sun during pleasant weather, and drawn in during stormy weather, or at night. It is up out of the way of fowls, and is so arranged that even a child can manage it, besides insuring a better quality of dried fruit, than if dried out of doors in the usual manner. The opening cut in the building should be so arranged as to be closed, when the drying season is over, with a long strip of board, or, better still, arranged with hinges.



A FRUIT-DRYING PLATFORM.

A Clothes Line Elevator.

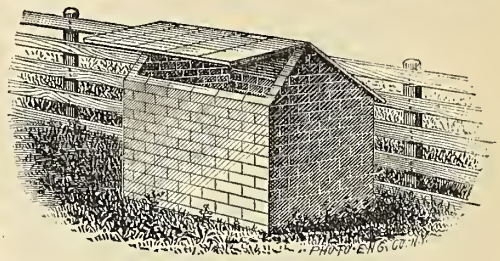
As usually strung up, the clothes line is almost out of reach, especially at the ends, and clothes are hung upon it with some difficulty, especially by a person of short stature. This difficulty can be quite successfully obviated, by the use of the simple arrangement shown in the engraving. The elevator consists of a plank post, *a*, projecting four feet above ground, to which is bolted at the top, near one edge, a lever, *r*, five feet in length. The end of the clothes line is attached two feet from the bolt. The opposite end, three feet in length, is used for a handle or lever for adjusting the clothes line, when filled with clothes, and is retained in position by a wooden button, *b*. A small block is nailed upon the post at *p*, to hold the lever in a horizontal position, while the clothes are being placed upon and removed from the line. A similar "elevator" may be placed at each end of the clothes line, and it may be made of any desired size.



ELEVATOR FOR CLOTHES LINE.

A Safe Ash Bin.

Many fires, sometimes most disastrous ones, are traced to the method of disposing of ashes; and no wonder, when so few families have any safe place for depositing them; even if they have iron pails for carrying them. Very often they are left in the pail in a wooden outbuilding, or thrown into a corner of a wooden smoke house, under the impression that there are no live coals in them. Hard-wood charcoal buried in ashes will hold fire a long time. We once uncovered a hickory stick, 4 or 5 inches in diameter, that had lain covered with ashes in a fire-place during eleven days, and found the buried end all aglow on exposure to the air. Farmers having a smoke house, if they burn wood, dump the ashes in one corner of it, to save them for soap-making, or as a fertilizer. But the large majority in both village and country, throw their ashes in a heap on the ground. A little expense would provide a perfectly fire-proof bin or house that will keep the ashes fresh and dry. The engraving herewith shows a convenient form. It is built of brick, is about 5 feet long, 4 feet wide, and 4 feet high, outside measurement. If the soil is sandy or well drained, the bottom may be a foot below the surface. The roof is made of boards



A CHEAP AND SAFE ASH BIN.

lined with tin or sheet iron—even with old stove pipes opened out flat. One side is hung on hinges at the ridge, answering for a door. A single course of bricks, making the wall 4½ inches thick, is sufficiently strong and almost any one can lay them. Old brick will answer, and it may be as plain or as ornamental as desired. It may be built of stone, if these are at hand, and can be used more cheaply than brick. Usually brick will be most economical, on account of the saving of work and mortar.

A Filter for Cistern.

BY GRUNDY, CHRISTIAN CO., ILL.

While visiting a friend last year, I was surprised to find that he was compelled to use cistern water for all purposes. In answer to my inquiries, he stated that no well water was to be had in that section short of one hundred feet, and then the quality was such that no one could use it. Springs were unknown. Three miles distant was a creek to which all live stock was driven, when cisterns and ponds failed. The water in the house cistern was simply abominable, caused by keeping the spout turned on, and running in every drop that fell on the house. At his earnest solicitation, I constructed a filter for his cistern, of which I give a sketch. He recently informed me that it works like a charm, and that his neighbors are all using it. Figure 1 shows the filter. It is a large barrel with one end knocked out. At the bottom is a layer of fine charcoal, *d*. Above this is a layer of fine gravel, *c*; over this is a layer of coarse gravel, *b*, on the top of the barrel is a thin strainer, *a*, held in place by a hoop which fits over the barrel. The cloth is depressed in the center as seen in the cut. This strainer catches all leaves and coarse dirt, and should be cleaned after every shower. Some use a wire strainer of very fine mesh, but the cloth answers the purpose very well. The filtered water flows through a hole, *e*. Into this hole a metal tube a foot or more long, punched full of holes, and covered with wire netting, is inserted. Six inches below the top is another hole, *s*, which is fitted with

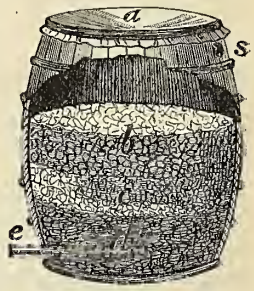


Fig. 1.—SECTION OF FILTER.

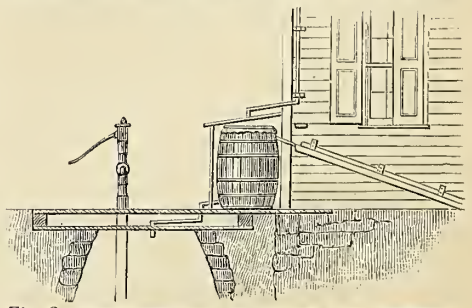
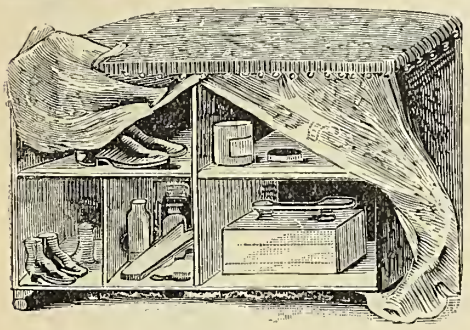


Fig 2.—ARRANGEMENT OF FILTER AND CISTERN.

a short pipe as seen in figure 2. During a heavy shower the overflow runs out of this hole, and into a spout provided for it. Figure 2 shows the general arrangement of the entire apparatus. The barrel has a small shed built over it, to protect it from the sun and weather. This shed should open at one end, so the barrel can be taken out at any time. The top is movable to allow the strainer to be cleaned. The lower section of the water-spout should be loose, so that it may be moved up or down, and turned. In figure 2 the elbow rests on a block, or bracket, and the water flows through a hole in the cover of the shed, into the barrel. When the cistern is full, the elbow is turned, and drops down to a block, and throws the water into the spout to be carried away, or into a "wash water" cistern near by. The above arrangement may be modified to suit different circumstances and places. When rain water is used exclusively for cooking and drinking, it is best to have a cistern for it alone, and a separate one for wash water. At the beginning of a storm, it is well to let the rain wash the roof for an hour or two, before the stream is allowed to enter the cistern. This is especially necessary where pigeons and other birds collect upon the roofs, as well as to wash off accumulated dust.

A Convenient Shoe-Box.

I am a dry goods dealer, and a regular reader of the *American Agriculturist*, having found many helps and hints from it for my poultry yard, garden, household, etc. I have received much, but given nothing, so I will turn over a new leaf, and help others in the same way. In my spare time I love to be at work with tools, and generally keep all kinds at my store; so when the dull, rainy days come, I tinker away at something, either for house or store. I send a description of a home-made "Shoe-Box." I took a light but strong case, two and one-half feet long, nearly two feet wide, and one foot deep, removed the top, stood it on edge, and put in partitions [as seen in the engraving].



CONVENIENT SHOE BOX.

With a roll of cotton batting I made a stuffed seat on top, tacked on a remnant of ticking, and covered the top and sides with figured cretonne, tacking only at the top edge, letting it hang down to the floor. Two pieces make the front, one half overlapping the other. It makes a pretty and very useful article. It may be covered with any material to match carpet or furniture. The expense of this was about sixty-two cents. It can be made either with or without casters: mine was without. Our shoes, etc., are always where we can find them.

"HOME-LOVING STORE-KEEPER."

Sweet Bread.

BY A MINNESOTA HOUSEKEEPER.

Having said something about sour bread, perhaps I should write about sweet bread, and how to make it. There is more than one way, but among these ways we ought not to include any that use soda or saleratus as a necessary ingredient. Neither should one depend habitually upon artificial sweetening, as sugar or molasses. These are only makeshifts. For sweet yeast-bread, sweet lively yeast is necessary. Fresh home-made yeast is probably the very best. The labor of making this is small, compared with the bother of watching it, and renewing it in time. Yeast-cakes from the factories seem to me less reliable than formerly, as I have found them unnecessarily bitter sometimes, seriously impairing the flavor of the bread. If good, they are very convenient. In setting the sponge over night, there is less danger of souring in hot weather, if the flour is scalded with boiling water for the sponge. This may be less in quantity than is needed for the bread, and in the morning more warm water may be added, and the whole either stirred thickly and very thoroughly with flour (warmed in winter, if you would avoid delay), or, in making white bread, kneaded well, and left to rise in a mass. A very sweet, moist bread is made by scalding all of the flour used for the sponge, and kneading this when light, without dilution with more water. It should rise again, in the mass (if made of white flour), and be well kneaded again when made into loaves, to rise the third time, preparatory to baking. This scalded fine flour sponge, when light, may be stirred thickly and thoroughly with either cold-blast flour, entire wheat flour, or graham, and kneaded once lightly, and put directly into the bread pans. This will make sweet bread without the use of sugar, *provided* the yeast is fresh and good. I mean that it will have a decidedly sweet taste. Fresh yeast seems to be more necessary for the brown flours than for the white. The sponge for bread, made of "Entire Wheat Flour," may be made of either the brown or white flour, and so far I like it best with the sponge scalded. But there is danger of scalding the yeast too, in which case the bread will either not rise at all, or rise very slowly and imperfectly, as it does when kept too cool. When the flour is scalded, either let it stand until cool enough, or only put in boiling water to make it up into a stiff dough, and gradually thin this with cold water until it is cool enough. Try it with the finger after stirring it up well from the bottom, and do not add the yeast until the batter is not above blood heat.

But such bread does not depend upon scalded flour, if the flour and yeast are both good. A simple batter of lukewarm water or new milk (scalded and then cooled sufficiently,) and flour, and fresh yeast (half a cup for three loaves), if not allowed to go a step beyond the proper (the vinous or alcoholic) fermentation into the acetic or vinegar fermentation, will be sweet, and nutritious in proportion to the nourishing properties of the flour. It may rise so light that all of the sweetness and nourishment seems to be fermented away without becoming positively sour; or if any of the sweetness of the wheat kernel is left in the dough, its taste may be concealed by excess of salt. Yeast contains considerable salt, and many bread-makers add none to the sponge or dough, preferring the flavor of wheat to that of salt. Others believe that the bread is whiter and "nicer" for the addition of salt to the dough.

It is a favorite method with some to scald a part of the flour for the sponge with the water poured off from the boiling potatoes at dinner, adding two or three mashed mealy potatoes. Very nice bread is made in this way.

Another good method is to make a thin gruel of corn meal (or a cupful of corn meal, well scalded with three cups of boiling water, stirred smoothly), and use this, when cool enough, for the bread mixing. This would make only two loaves. Of course yeast is added, in any method of making yeast bread, or "light bread," as many call it.

When poor materials are used, or when mixing with sour milk, or using baking powder, a little sugar improves the flavor of the product, or helps to conceal any unpleasant taste. If the sour milk or buttermilk is fresh, and just the right proportion of soda is used, the flavor may be good enough, but most baking powder has a "tang," more or less disagreeable. In all this baking powder warfare, it is pleasant to know that good, light, sweet bread can be made with no artificial rising whatever, if one has good flour and fresh water or sweet milk—just two materials, and a hot oven and good *care* or skill. In making white flour gems, or sweet milk gems of any kind, I find it better to add a well beaten egg and a little salt.

Preserving and Canning Green Corn.

In the July number, we requested any one who had successfully canned green corn and green peas in the family, to give us an account of the method. Several have responded as to canning corn, but only one mentions peas. A number use some preservative, such as Salt, or Tartaric Acid, while but one cans corn by exclusion of the air, without any addition. Among those using salt, is Mrs. "S. H. M.," Blue Ball, Pa., who says: "Place in a preserving kettle, seven pints of green corn, cut from the ear, one pint of salt, and water enough to cover it. Boil for five minutes, and place in glass jars the same as in canning fruit. For use, put the corn to soak in water the evening before. Prepare for the table by heating and seasoning." Mrs M. says, if properly done, it is as good as fresh corn.

From Mrs. "C. M. Mc.M.," Denver, Ill., we have the following: "The corn should be well filled, but not too hard. Cut the kernels to remove about half of their length, and scrape with a knife to remove the rest, and all the milk, leaving the hulls on the cob. For each quart of corn, add one pint of water, and cook until done. Have ready a solution of one pound of Tartaric Acid, in one gallon of water. When the corn is done, add of this Acid solution, four tablespoonfuls to every quart of corn, let boil for three minutes, and put into new tin cans, and seal tight. Corn will not keep well in glass jars. Instead of the sealing-wax sold at the stores, I use a wax made of Rosin, toughened by adding to every pound of Rosin, a bit of Lard, the size of a hickory nut. To prepare this corn for the table, open the can, taking care that no sealing wax gets in; turn the corn into an earthern dish, add to it one good teaspoonful of soda, and let it stand an hour. Then place it on the back of the stove, and let it come just to a boil; season with butter, salt, and pepper, and one or more tablespoonfuls of corn starch stirred in a little cream. Taste before serving, and if sufficient soda has not been used, add a little more. This process has had a faithful trial of three years in our family. Last year we put up 50 quarts, not one of which spoiled."

Doct. C. N. Diller, Carroll Co., Md., directs the use of six quarts of corn, and water enough to cook it; one ounce of Tartaric Acid, dissolved in boiling water is added while cooking. When done, can in tin or glass jars. In preparing for table, the acid water is poured off and saved; enough fresh water is added to cook it, and a small teaspoonful of soda; let it stand for a few minutes, before putting it over the fire. While cooking, add a teaspoonful of sugar. If the corn turns yellow, too much soda has been used, the natural color may be restored by adding a little of the sour water saved for the purpose. Season as for fresh corn.

Corn is successfully put up without the use of salt or acid, by the Rev. J. H. Magoffin, Washtenaw Co., Mich., who says: "After stripping off the husks, and picking off the silk, slice off carefully about half or two-thirds of the corn, with a sharp knife; then, with the back of the blade, press or scrape off that part of the kernels left on the cob. This prevents cutting of the cob. Fill the can about one-third, and with the other end of a potato masher, or other stick, gently pack it down; put in more corn and pack again, and continue until the can is *full to the very top*. Put on the rubber, and screw the top on very tight. Put some cloth, hay or straw in the bottom of the wash boiler and on it set (or lay) the filled cans. Fill the boiler with cold water, being careful to *cover the cans* with it: set over the fire, and boil for three hours or more. Do not fear that the cans will burst, even if very tightly screwed down. When you take them out, try if it is possible to screw the cover on more securely. After the jars are cool, wrap each one in paper, and set away *in the dark*. This is essential."

Mr. M. writes, that in his family, this process "succeeds perfectly, absolutely without a failure," he adds; "Succotash is put up in the same way, and so are green beans, and string beans. Peas you cannot pack—shake down very closely—put on rubbers, screw on cover, and boil in the same manner as directed for the corn. They will shrink in the can—corn will not if packed hard."

The Doctor's Correspondence.

A young friend in Michigan, Fred. W. Harrison, would like to know about a tree, and an insect that he found upon it. He writes: "I noticed the tree this week for the first time: it was by the road-side, and from the appearance of its leaves, I at first thought it was a Poplar, but its bark is thicker and rougher, than that of the Poplar of the same size. Upon the end of every branch of this tree, is a curious, unnatural growth, which is hollow, and full of little flies and lice, not unlike turnip-lice. I send you by the same mail, some pressed leaves, a piece of bark, a twig with said growth, and some of the insects. I am a young farmer, much interested in your writings, and trust that my description, and the specimens, will enable you to inform me about the tree and the insect."—Good for the young farmer, and I commend his letter to others of my young correspondents. He sends just the specimens needed, and tells what he

Fig. 1.—THE VAGABOND GALL.

knows about them. Many send specimens, and merely ask, "What is it?" when a few words telling how and where the things in question were found, and what was noticed, would be a great help in making them out.

Firstly—As to the Tree.

My young friend speaks of "the Poplar," as if there were but one kind, while we have this side of the Mississippi, at least six very different poplars. I take this one to be the "Necklace-bearing Poplar." Its botanical name is *Populus* (Poplar,) *monilifera* (Necklace-bearing). Here both the common and the botanical names refer to the same thing. In the fruit-bearing tree (for poplars have their staminate and pistillate, or fertile, flowers upon different trees), the little roundish pods that contain the minute seeds, are attached to a long slender stem, and the whole looks somewhat like beads strung to form a necklace. The tree is found from New England to the far West, where, in common with other Poplars, it is called "Cotton-wood." In many States, the name "Poplar" is given to the Tulip-tree, or White-wood, a tree very unlike the true Poplars.

The "Curious Unnatural Growth,"

which is represented of about the natural size in fig. 1, is a kind of gall. That which is generally known as *the*

Fig. 2.—GALL INSECT.

gall, or "Nut-gall," is roundish, about the size of a boy's marble, or less, nearly smooth and regular, heavy and almost solid; it is very astringent or "puckery" to the taste, and is used in dyeing, and calico printing, in tanning fine leather, and in making black ink. They are found on an oak in Asia, on which they are produced by a small insect, which deposits her eggs in the tender shoot, which she punctures or pricks for the purpose. The term gall is now used for excrescences, or "unnatural growths," produced by insects on all sorts of plants. Galls are very numerous, and are produced by very different insects, by beetles, moths, flies, and by plant-lice.

I must now speak only of the gall from Michigan. About 15 years ago, the late Mr. B. D. Walsh published, in the "American Entomologist," an account of our native galls; he there called the one sent by my young friend

The Vagabond Gall,

and I borrow his picture of the gall, (fig. 1,) and the insect (fig. 2,) which makes it. The insect is a plant-louse, and long before it was known to have anything to do with making galls, it was described as the "Vagabond Plant-louse" (*Pemphigus vagabundus*,) on account of its vagabond habit of wandering to great distances. The body of the insect is black, and its wings are delicate and transparent; the real size of the insect is shown by the lines below figure 2. Master Fred. speaks of "little flies and lice;" but the "lice" are the same as the "flies," being wing-less females. Mr. Walsh does not state how the gall is produced, but it is probable that a wing-less female anchors herself by her beak, and the "unnatural growth" forms and envelopes her; at any rate, the gall is found to contain a louse, which rapidly produces young lice, which are ready to leave their house, the gall, in early autumn. Mr. W. states that while these galls are very abundant in some years, in other years no fresh ones are to be seen, though the old galls remain on the tree for several years, and when the leaves are off, give it a singular appearance. My correspondent says;

"I am a Young Farmer,"

and much interested"—he says, in my writings, but that is only because they are on subjects that interest him. I wish that every "young farmer" could be "much interested" in the things around him, the matters of his daily life—what old farmers we should have!

Boys! I would like to say one earnest word to you. Much is said about "keeping boys on the farm." I don't expect that all boys will stay on the farm, and it is not desirable that they should, though many more can, and ought, than now do stay. The trouble with you is, that you do not know the opportunities of a farm life, for making broad intelligent men of you. I was born and brought up in the city, and when supposed to be "educated," went into a store. It was only when I was 18 or 20 years old that I knew that wild plants, insects, minerals, etc., were worth looking at. I well remember the first plant I examined—what a new world was opened! My point is, boys, that you have all these things open before you in your early days; your daily life is surrounded by them.

The Life of a Farmer's Boy

need never be dull and uninteresting, if he will but use his eyes, and inquire about whatever seems strange. While I know that some of you will, and ought to, leave the farm, those who remain at home, and rightly use the privileges of that home, are the ones to be congratulated. Boys, think seriously of this. THE DOCTOR.

Two Odd Chairs and Their History.

Glad to learn of any novelty that would add a treasure to the "Curiosity Shop" of my little nieces, I watched a friend with much interest in the shaping of the little chair shown in figure 1. The quill feathers from the wing of the turkey, are the only ones required. The four uprights are made of the thickest portion of the quill, and are placed with pointed ends downward, to form the legs of the chair. The two in the back are four inches in length, those at the front two and a half. The lower cross-pieces and arms, two inches in length, are made of a more slender portion of the quill than the uprights, and are stripped of the plume, and smoothed with a sharp knife. The pieces which compose the ornamental back are made from the tips of the feathers, and are formed by cutting the filaments into pointed shape, as shown in the illustration. The seat is made of four pieces of a thick portion of the quill, each of which is smoothed on the outer side, and the filaments so cut on the inner side, as to form a one-quarter section. This must be very neatly done, and the sections cut to slightly over-lap in forming the seat. All the parts are held firmly together by medium-sized pins, which are driven through the uprights, and lengthwise into the cross-pieces. Much taste can be exercised in the choosing of feathers for this purpose, those with attractive markings being the most desirable. It was my sad pleasure not many weeks since, to visit, at a home for the insane, a friend I had not seen in thirteen years, and who in the interval had from a series of misfortunes become deranged. Deplorable as her state is, I was glad to find that her hallucinations were pleasant and comfortable ones. In the midst of all these wanderings, she keeps her room, clothing, and person in perfect order, and except when talking to visitors, is very busily engaged. As the matron said, "She made a thousand and one pretty notions." Her walls were covered with picture frames and brackets, and her tables with really beautiful articles. I examined everything carefully, and wondered how a mind so restless and imaginative, could fashion so many things, perfect in shape, and harmonious in color. I examined so much the novel chair, shown in figure 2, that she begged me to take it home. The foundation of the cushion is a portion of the large end of a bottle cork, the upper side is padded with cotton, and the whole neatly covered with

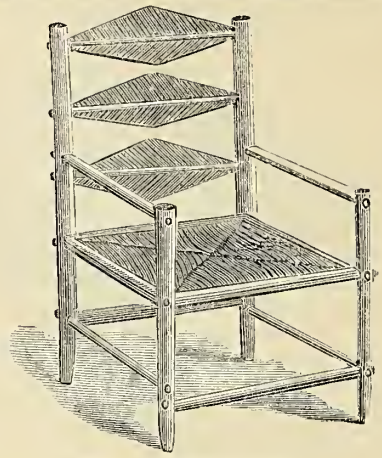


Fig. 1.—FEATHER CHAIR.

pearl-colored silk. Embroidery in cross-stitches, ornaments the edge, and is done in "single zephyr" worsted of a deep garnet color. The legs are made of strong pins. A small black bead is first slipped close to the head to represent a roller; then the whole is wound closely with the garnet worsted, and a large milk-white cut-glass bead is slipped over the worsted, and brought to rest against the black one, and although the pins are closely wound, the worsted will recede from the points, and become firm in place. The back of the chair is formed of a medium-sized hair pin, with the ends bent outward. Half an inch above the lower end, garnet worsted is woven in "over and under stitch," until three-fourths of an inch of the hair-pin is covered; then a white bead is slipped over each prong of the hair-pin, and placed closely against the worsted. Half an inch more of space is woven of the worsted, then two more heads are added as before, and above them worsted is again woven to the space of one-fourth of an inch. The parts of the hair-pin above this point, are then wound like the legs, and the white and black beads finish the ends; the black bead should be made secure by wax. The uncovered part of the hair-pin is then inserted in a neatly cut incision in the edge of the cushion, when it assumes the form of a back. All is made complete by stretching a cord made of the worsted, from the points of the hair-pin, to the lower beads, and from them to the back of the cushion. AUNT IDA.

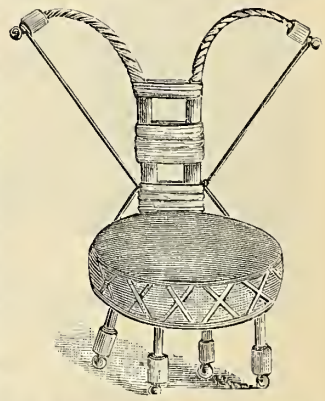
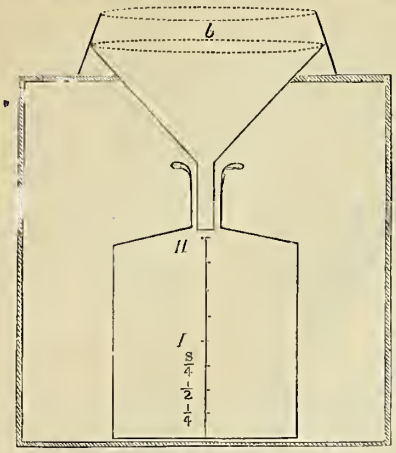


Fig. 2.—CHAIR FROM A HAIR-PIN.

A Tasmanian Rain-Gauge.

In April last, the Doctor's Talks had something to say about rain, and rain-gauges, and a simple instrument, sent by a friend in Massachusetts, was described and figured. Now comes another Rain-gauge, from "B," at Hobart, Tasmania. If you do not know where Tasmania is, perhaps it is because you have been taught to call it by its old name, Van Dieman's Land. Our correspondent sends a drawing and says: "At our observatory, I learned that a round receiver is used, exactly 8 inches in diameter, and that 3½ fluid ounces of water caught in that, represents a rain-fall of ½ of an inch. Then I hunted up a large bottle, holding three quarts or more, and made a line down it with my glazier's diamond. Then I got my chemist to put in 3½ ounces of water, and mark the hight at which it stands, as ½-inch; 3½ ounces more of water, makes ½-inch, and so on. Around an ordinary 9-inch tin funnel, I get the tinsmith to solder on a strip of tin; this is hevelled as in the engraving, so as to make the top exactly 8 inches across; then the rain pitching in, can't jump out. Finally I cut a hole in the

top end of a small box, and put the lower end of the funnel through in to the bottle placed in the box, and fixed



TASMANIAN RAIN GUAGE.

the whole in an exposed situation. The cover being put on with binges, is just opened, and at a glance I see what rain has fallen."—As a glazier's diamond is not always at hand, you can make a scale that will answer very well, by pasting a narrow strip of paper lengthwise on the bottle; use flour paste. By "Chemist," he means apothecary or druggist, who uses a graduated glass, to measure the water. You can find such a glass at any doctor's office, or druggist's shop. You can mark the hight at which each 3½ oz. of water stands, with a pencil. If you go over the pencil mark with ink, and then varnish the paper, the scale will be more permanent.

The Doctor's Talks.

There are a few kinds of fruit yet to be described, some of which you will be especially interested in, as soon as frosts come, and those perfect days, in which boys, and girls, and the squirrels, enjoy the pleasures of a day in the woods at nutting.

"But are Nuts Fruits?"

some of you may ask. They are not fruit in the language of commerce, or of the shops, though botanically they are Fruits. You will recollect that it was stated, some time ago, that the fruit was the ripened pistil, and whatever remained attached to it. I wonder if you thought to examine the chestnut trees when they were in bloom last July. The chestnut is the latest of all our forest trees to come into flower, and it is, I think, a most beautiful sight, when it hangs out its abundant whitish tassels. I have heard persons predict that there would be an abundance of chestnuts, as the trees were so full of bloom. They did not know that those showy flowers

Fig. 1.—CHESTNUT LEAVES AND FLOWERS.

were merely staminate, and that the pistillate ones, those that would become fruit, were quite different in appearance. These showy blossoms of the chestnut, consist of many little flowers placed upon a long slender stem; they have a 6-parted calyx, and 6 to 12 stamens. The fertile, or pistillate are sometimes at the axils of the leaves, but most generally at the base of those catkins that are nearest the end of the branches. Figure 1 shows one of these catkins, with a cluster of pistillate flowers at the base. In fig. 4 you have, in the right-hand upper part of the engraving, these clusters somewhat enlarged. The clusters usually contain three flowers like that shown at the upper left-hand. Those slender bodies at the top of the flower are imperfect stamens, not pistils, as you might at first suppose; the pistils are very fine, and bristle-like, as seen in the cut open flower below. These flowers are in a scaly cup, which, later in the season, grows into the well known prickly chestnut-bur, that carefully guards the nuts until they are ripe, when it breaks open in two or four places, and lets them fall. If the bur is so rough without, it is soft and downy within; it holds the nuts so closely, that they have to shape themselves according to their number. When there are three, the middle one is flattened on both sides, and the outer ones have a flat and a rounded surface; occasionally a bur will have but one nut, when it is equally rounded on all sides.

The Oak is Closely Related

to the chestnut, though they do not look much alike. The staminate flowers of the oaks are not so showy as those of the chestnut, and in looser catkins; the pistillate flowers are also surrounded by a scaly involucre, but they are solitary. At the left hand of figure 3, is shown an enlarged flower, and one cut open. When the

Fig. 2.—FLOWERS OF THE OAK.

nut or acorn grows, the involucre, as a general thing, does not elongate, but remains as a more or less shallow hard cup. In the Over-cup Oak, and some foreign oaks, the cup does increase however, to partly or nearly cover the nut. The oak blooms much earlier than the chestnut, some of them, like the White Oak, ripen the acorn in the autumn of the same year, while others, such as the Black Oak, take two years to mature them.

There is found from Pennsylvania, and Ohio, and more abundantly in the Southern States,

The Chinquapin, or Dwarf Chestnut.

It is a small tree, rarely 20 feet high, with flowers similar to those of the Chestnut, but the pistillate flowers are solitary, and consequently the bur contains but a single nut, which, not being pressed by others, is always rounded, and looks much like an acorn without its cup. Those of you who live where they are abundant, may well gather them, for they are, though small, very sweet.

Beech Nuts

Very abundant some years, should not be left entirely to the squirrels and the pigs. They are small, but you can, by searching, find certain trees that yield much larger and finer nuts than usual. You have no doubt noticed the little round heads of staminate flowers, that come in May. The fertile flowers are like those of the chestnut, but there are never more than two in an involucre, which ripens into a prickly bur. The seeds are sharply three-cornered, and sometimes there is but one in a bur, when it grows much larger than usual.

Walnut, Butternut, and Hickory.

These, like the oak and chestnut, have their sterile flowers in catkins; the fertile ones are solitary, or a few together on a short stem. The fruit is very different from the chestnut and acorn, as it is not surrounded by anything like a bur or cup. In order to understand these, the walnut, etc., you must remember how the peach was explained, or it may be well to turn to the August Talk, and read that portion over again. You will there see that the peach is the ripened pistil, or rather, the lower part of the pistil, the ovary; you will see that in growing and ripening, the inner part of the ovary becomes hard, and forms the peach stone, and the outer portion, the flesh of the peach. In the Walnut and Hickory, a similar change takes place; a part of the ovary becomes the shell of the nut, and another part becomes its husk. In the Black Walnut, and Butternut, this husk remains attached to the nut; in all the Hickories, it, when ripe, breaks away from the nut, and falls off in four pieces.

One young friend asks me to tell him about

The Pea-nut or Ground-nut.

This is also a fruit, though it does grow under-ground. It was described a year or two ago, but not in the Boy's

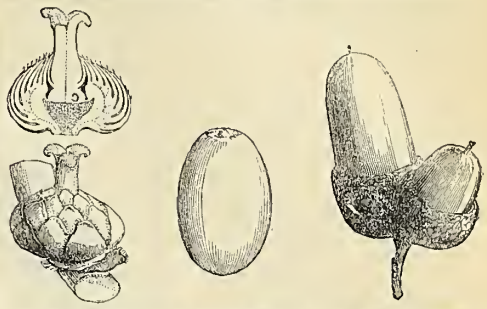


Fig. 3.—PISTILLATE FLOWERS OF OAK AND ACORNS.

and Girl's Columns, and the young folks may not have noticed it. The Peanut has a very curious way of managing. The plant produces its little flowers, which bloom, and the petals fall away. Then the slender stem which held the flower, and now holds the pistil, begins to grow longer, and point downward, and the result is, that it pushes the pistil or young pod down out of sight, and here, under-ground, it completes its growth, and ripens its seeds. The Pea-nut pod differs from the pod of the ordinary pea, in being much thicker, and in not readily splitting apart at the seam; where the two halves of the pod join. Any one of you can see the manner of growth in the Pea-nut, by planting a few seeds. These must be taken out of the shells before planting, which must not be done before danger of frost is over. Do not make the mistake of planting baked pea-nuts, as that would be as bad as that of the unfortunate man who planted popped corn, and was disappointed in the result.

A Farm Museum.—"F.," who is tired of collecting postage stamps, asks what he can collect at home about the farm that will be interesting. Farms vary greatly; some are by the sea or salt water rivers; others are near lakes or fresh water streams; and others are far away from either. One can collect a great variety of interesting objects, wherever he may be. We do not think much of collections, merely for the sake of accumulating things. Collections to show what grows in and about the farm are of use, and we wish that every

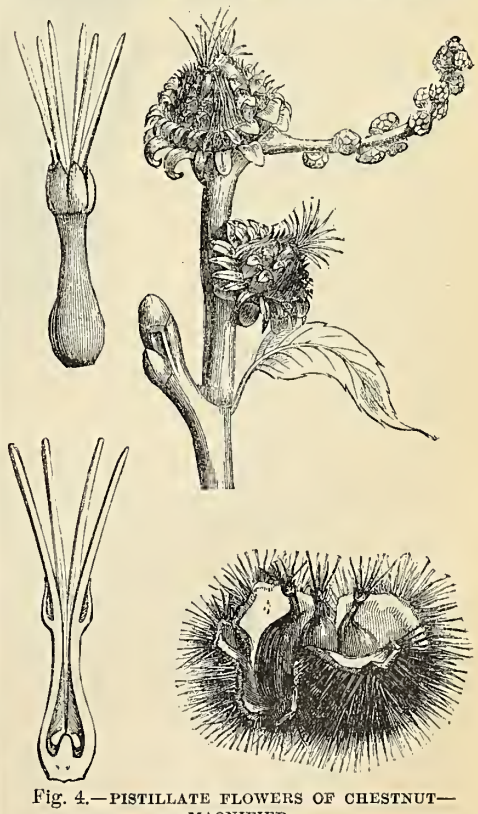


Fig. 4.—PISTILLATE FLOWERS OF CHESTNUT—MAGNIFIED.

boy and girl could have a Farm Museum, showing every kind of rock, every kind of wood, with the leaves, flowers, and fruit of each tree, and every smaller plant, with its seeds, that is found wild upon the farm.

A Farewell to the Woods.

BY AGNES CARR.

The summer is almost at an end. Bright, enchanting summer! that has brought us so many happy days, and led us so gaily over mountain and stream, by the "sad sea waves," or through the shady forest—Nature's grandest Cathedral—where high arches of interlacing boughs, such as no mortal man could construct, meet above our heads, here and there giving us glimpses of the heavenly blue dome beyond, while thousands of sweet-voiced bird choristers chant the Creator's praise in every leafy aisle, where beds of softest moss, in cool recesses, gently woo us to summer dreams. On hill and dale, throughout the land, the little city folks have gladly joined hands with their country cousins, who in their turn were delighted to show them where the berries grew largest and thickest, where the cutest bird's nest was snugly hidden away among the leaves, and where the most fish would rise to the tempting bait. Summer holidays are ever halcyon days, but now the genial-faced sun is growing lazy. It is later, and later every morning when he parts the rosy curtains, and comes creeping up above the horizon, and earlier and earlier every evening when he dons his cloudy night cap, and bids us "good night, and pleasant dreams." There is a slight chill too in the air, which betokens the approach of icy-breathed winter; a golden mist adds a new beauty to the landscape, and we say: "Indian summer is smoking his calumet of peace," and September has rung the school-house bell, which ends vacation, and summons unwilling boys and girls from their sport and play, back to tasks and books, with, we hope, a bountiful stock of health and good spirits. Every boat and train may now be seen ladened with these sun-burned little wanderers, hasteuing home to city walls, casting back half envious glances at the bare-footed lads, and rosy-cheeked country lasses, who flock round the depots to bid them farewell. And now the question for us to ask ourselves is, "How much drift-wood have we gathered for the winter fire?" You all know how the little squirrel "improves the shining hours," by laying up a store of nuts and acorns for the cold days, and many a poor family depends upon the dry brush, and stray bits of water-soaked wood, collected through the warm weather, to keep them from freezing during the long hiting winter, and we, I trust, have a hoard of pleasant memories, if nothing more, to refresh us, when the world is bound in ice and snow. The birds have flown to sunnier climes, and we gather round the cheerful fire-side, and recall our summer joys and pleasures.

But the memory is apt to be treacherous, and I would suggest that a journal or diary kept during vacation, would be very useful in bringing back to your mind, this gay picnic, or that pleasant sail upon the dancing water, besides inspiring both your writing and composition. Then we have seen a "Summer Souvenir Book," which is a nice memento to preserve. For this, at each place visited, you should gather leaves or flowers, and, if possible, procure a view or sketch of the spot. The leaves and flowers must be pressed, and together with the picture, neatly pasted in a scrap-book, while below you can write the date, and the names of the persons who were present on the occasion or excursion. Those at the sea shore, will find sea mosses carefully mounted on cards, and tiny shells suitable for these books.

Ferns, autumn leaves, and dried grasses, you all have probably used to decorate your homes, but the prettiest winter bouquets can be made from the milk-weed pods, when fully ripe, by separating the silky fibre, passing lightly through your lips, and tying small even bunches of it, quite near the end. They will open into flowers somewhat resembling tuberoses, and when mounted on wire stems, and mixed with ferns, are extremely pretty.

Pleasant friendships are often formed in our summer homes, when we are thrown so intimately together, and are to a certain degree dependent upon one another for enjoyment, and of all, this kind of drift-wood is probably the best worth collecting. And children, remember, good nature, and kind acts, are the magnets that draw all hearts, and keep the fire burning, when the winter of life comes on.

"FAREWELL TO THE WOODS."—*Drawn and Engraved for the American Agriculturist.*

But before we say "good-bye," and turn our faces homeward, I would invite all our young friends to go with golden-haired Elsie, and me, for a farewell walk in the autumn woods. How the dry leaves rustle beneath our feet! Elsie delights to wade through them ankle deep. They form a perfect carpet now, but before long, old Mother Nature will pack them down in her underground closets, just as your mamma puts away your cast-off clothing, for when spring comes again, the trees will disdain these sombre hues, and will demand bright new green dresses. But look up, and see how gorgeous these forest beauties are now! Surely Solomon himself could never have worn more glorious apparel! The artist, Jack Frost, has been this way, and painted these marvellous colors of crimson, and gold, and brown. He is the same saucy sprite, who in a few months will draw beautiful etchings upon your window panes, when you are sound asleep. "The trees look as though they were dressed for a ball," remarks Elsie, "So they do, but it is a sad beauty, for these brilliant hues show that the blood or sap in their veins is slowly drying up, and after a while these leaves will be as wrinkled and brown, as these beneath our feet." The wind sighs half mournfully in the branches, and the stillness of the wood is broken by the dropping of the nuts. Elsie has gathered into her already well filled basket glossy chestnuts, three-cornered beech nuts, like little cocked hats, and the acorns that she calls "cups and saucers."

Her hat blows off in the excitement of the hunt, the breezes play with her yellow locks, and her eyes sparkle gleefully. A queer chattering noise sounds above our heads, we look up, and spy a sociable little chipmunk seated low on a tree, and holding a nut between his tiny front paws, which he is eating greedily. "Oh! you dear cunning little fellow!" cries Elsie, "did you think we were going to carry off all your winter food?" The squirrel winks, and waves his feathery tail, but does not attempt to run away; and I stand back to see and admire the pretty picture.

"There," continues Elsie, "I will leave you a feast;" and she scatters a generous handful of nuts at the foot of the oak-tree. "Good-bye, Mr. Chipmunk, for I am going to leave you soon, give my love to Mrs. Chipmunk, and the bright-eyed little babies;" and with a merry laugh at her own conceit, Elsie danced off down the path.

The poor frost-bitten wild flowers look like ghosts of their former selves, but a few sprays of golden-rod, and some modest little plants, still hold their own.

"What do you suppose those ugly weeds were made for?" asks Elsie.—"For delightful summer residences I don't doubt." —"Houses, do you mean? Why! who lives in them?" And the blue eyes gazing into mine, are large and round with surprise.—"Ladybug, little Miss Midget, and hundreds of their intimate friends. Poor things! Jack Frost will catch them, too, before long; but don't you know what one of our own poets has written—

"There's never a leaf or blade, too mean
To be some happy creature's palace."—

"I always think of that when I see those mites flitting in and out."—"I hope they have had as lovely a summer as I have," says Elsie, putting down her ear to hear the soft hum of the insects. The shadows begin to lengthen, and warn us to retrace our steps; so we strike into a new path, and follow it some distance, when Elsie suddenly exclaims, "Do you see those 'babes in the woods,' over there?"

I look, and behold a doleful little pair seated on a low branch, while, to complete the scene, a number of birds flutter about them, in search of the crumbs of bread they have scattered there. "They are the "Howard twins," Elsie informs me, "Jeannette and Jeanot," and as we approach, they greet us with a mournful smile.—"What is the matter?" I ask.—"We are going home to-morrow;" groans Jeanot, and are feeding our birdies for the last time."—Jeannette's pretty eyes are full of tears, but she says quite cheerfully, "never mind brother; may be we will come again next year, and the birdies will be so glad to see us."—Happy little heart! that can thus look on the bright side! and it is a sweet memory we shall carry away of these plaintive babes in the woods.

The trees become thinner, we are near the edge of the forest, and our autumn walk is at an end. Elsie draws a heartfelt sigh, and softly hums, "Home, Sweet Home," and I cast a last, long, lingering look backward, into the green depths of the wood, where the voice of the wind in the tree-tops, and the song of the insects in their flower cradles, form a sad refrain, that seems to say, "The summer is over, and winter is at hand. Farewell! farewell!"

To Old Friends and Readers.

We have appreciated your support in the past, and with the great improvements in the paper, may we not expect you to continue in our great army of readers, and bring very many recruits with you for 1883? Thousands of you, in writing at different times, have told us you regarded the *American Agriculturist* as the cheapest journal in the world. While this has been undoubtedly true, the price will continue the same, notwithstanding the great improvements made.

A Cheap Milk-House.

Mr. "J. D.," Defiance, Ohio, writes us: "We have a milk-house, made of brick, with 20-in. walls, and covered with about 18 in. of saw-dust. A window (hung on hinges) is situated in the south end, covered with a wire-screen. A flue is placed in the south end, which acts as a ventilator and can also be used to put up a stove, if desired, in winter. A low, steady fire will keep the room at a proper temperature in very cold weather. At the south end is also a trench about 15 in. deep, in which flows the waste water from the pump. This is let in from the north end by using a piece of pipe from an old force pump; the water is conveyed along the side by a small trench left in the floor, which is made of cement. From the trench a tile goes through the yard and garden, having its outlet in a calf pasture, where is placed a box or trough to catch water for calves. So we have three things combined, an outlet for the water in the trench, a drain for the garden and yard, and a watering place for the calves. It will very materially aid in keeping the building cool in hot weather, to open the window in the morning and let in cool air. This building, though small in the interior, 6⅔ ft. by 8⅔ ft., will hold a large quantity of milk. It is very easily kept clean and fresh, and if not wanted as a milk-house in winter, can be used as an above-ground cellar, by placing on another door and fixing a bundle of straw to just fit between the doors, which can be fastened to the outside door and swung with the door. The cost of building need not exceed $125; it can be built with 8,000 bricks, and will never be found a bad investment. Our butter is pronounced "gilt-edged," though the cream is raised in common one-gallon crocks."

Cleveland Bays.

Those interested in the breeding of horses, have of late years paid little attention to this famous old breed, which, among the hills and moors of Yorkshire, has for generations been held to embody all that is useful and excellent in horse-flesh. They were large, powerful, close-knit, stylish horses, and chiefly valued as coach horses. The supply long ago fell short of the demand, and the breeding stock was drawn upon, and fairly exhausted. It was announced by European writers, that the breed was extinct, and it is no wonder that we, in this country, accepted their view. Occasionally the traveller in England sees a fine stylish pair of coach horses on Rotten Row, or at the West End, blood-bays of grand presence and carriage, showy action, and neat, but powerful-limbed, and hears them called Cleveland Bays. On inquiring of the wiseacres, he is told that there are a few fine old mares left in Yorkshire, which are bred to thoroughbred stallions, and get such horses as you see. This was all the information about these horses that the writer could get in England a few years ago. Last month (August,) the "Canada," of the National line, landed in New York several valuable consignments of live-stock.—Jersey, Guernsey, and Hereford cattle; Clyde, Norman, and English draft horses, and besides these a lot of Cleveland Bays, going to Iowa.

The importer imparts some interesting facts about these horses, of which he has made a special study. This is his third importation, and the lot consists of twelve suckling colts (three to six months old,) twelve yearling colts, three brood mares, ten young stallions, and one stallion of 7 years old. They were remarkably uniform in appearance and size, the full-grown one standing 16-hands high, and weighing thirteen to fifteen hundred pounds. They were all of a rich bay color, with black points, a few of the young things showed a little white, as a star in the forehead, or one white foot, which was thought to come from a thoroughbred cross. Their heads were remarkably similar; their necks arched, and shoulders sloping. They were close coupled, with powerful hind-quarters, high-set tails, and excellent underpinning.

Those horses were not selected to look alike, but were really all the importer could get that had any claim to be regarded as Cleveland Bays. A few of these had one-fourth thoroughbred blood, but possessed the general characteristics of the Clevelands, and were fine animals. They were picked up among the breeders, one or two in a place. A good many grand old mares were found, some of them 25 years old, of great constitution, and bearing a foal every year, owned by poor farmers, and doing all their work on the farm, and on the road. They boast of their horses going ten or twelve miles an hour with heavy vehicles on common roads, but know nothing of what we call "speed." These people think they are preserving the ancient breed, with little of any intermixture of other blood, and the stock which has been of late imported, is proving excellent, and gaining for itself a very satisfactory reputation. The half-bloods produced by these stallions, crossed with good sized western mares, promise to make fine, large, showy spirited carriage horses, of great bottom and constitution, which is just what the market wants, east and west.

Liquid Manure.—"N. D. P.," Nemaha Co., Kans., asks: "Why one can not save the liquid manure from his cattle, by allowing the drains from the stalls to empty into casks, which can be carted off as often as necessary, and applied to the lands under cultivation." This would be an excellent method. The point is to save the drainage, and it is not, as our correspondent has been informed, necessary for the liquid to be kept in tanks until it gets old. If the method suggested is most convenient, adopt it; if found more convenient to have the liquid manure taken up by absorbents, adopt that method; any plan that will best save the liquid manure and put it upon the land, is better than the usual no method, that allows this valuable fertilizer to run to waste.

Greening Pickles.—"H. D.," writes us a very pleasant letter, from the far off Uncompahgre Valley, Colorado. Among other matters, he gives a method of greening pickles for family use. Place a layer of cabbage leaves, the outside leaves are best, in a pan; put in the pickles, and upon these another layer of leaves, and cover the whole with cold water. Place the pan upon the stove, and let the water come almost to the boiling point; actual boiling would soften the pickles. After a while the green color will have left the cabbage leaves, and will be found to have entered the pickles. Allow the pickles to become quite cold, then bottle with the best cider vinegar, adding to each quart a tablespoonful of sugar. If desired to be especially firm and crisp, add a piece of alum as large as a nutmeg, to each quart. Our correspondent says, that while cider vinegar does not make as handsome pickles as the colorless, or "white wine" vinegar, this method of greening is satisfactory, and of course quite harmless. We have seen vine-leaves advised in European recipes, to be used in a similar manner for greening pickles, and have no doubt that there is something in the method of value.

The German Edition.—All the principal articles and engravings that appear in the *American Agriculturist* are reproduced in a German Edition. It is the chief and best German Journal of its kind issued in this country. Our friends can do good service by calling the attention of their German neighbors and friends to the fact that they can have the paper in their own language. Those who employ Germans will find that Edition a most *useful* and acceptable present.

To "J. B.," in Burlington, Kas.—Your pleasant letter came; fearing that we could not reply in the paper, we wrote a reply, and when we came to address the letter, found that the only signature was "J. B." As Charles Reade has it, "Put yourself in his place." We have so long made it a rule not to notice anonymous letters, that we did not suppose that your interesting epistle could come from one ashamed or afraid to sign it, hence wrote a reply which we found to be only waste paper. As a punishment for your wrong-doing, know that you have one of the worst of all cabbage pests, described elsewhere in this paper as the "Harlequin Cabbage Bug." If your other questions did not interest others, we should not notice them, but we give them for the benefit of others. You need not think that any question relating to plants is "foolish." You ask, if "potatoes can grow without eyes." Yes. Your "neighbor" is not the only one who has raised potatoes from tubers from which all the eyes have been removed. A potato tuber is a stem, and, like other stems, can form buds when needed, even if those normally belonging to it have been removed. You ask, when Early Rose potatoes should be dug. When the tops die down. If they will rot if dug in hot weather, they will rot at any rate. We are all in the dark as to the tomato rot. Have it badly on our own place, and the experts do not help us

Profitable Pig Feeding.—"H.," Washington, D. C. Probably the best account of pig feeding, is given in Coburn's "Swine Husbandry." There the sensible view is taken, that while the animal is making its growth, it does not need a constant diet of corn, but good pasturage. The use of Jerusalem Artichokes, (also called, as to the best variety, "Brazilian,") is highly commended. When the frame is built up by giving a variety of food, then corn is used for fattening. The subject of cooked food is fully discussed, various experiments are given, showing that under certain conditions, it is profitable to cook the food.

Kerosene Barrels.—"C. G. S.," Suffolk Co., N. Y., asks how tubs, made by sawing kerosene barrels in two, can be made suitable to hold water for stock. This subject came up several years ago, and at our request for the experience of those who had utilized oil barrels, we had a great number of replies. The majority of these were to the effect that sufficient soaking in water, either by sinking the barrels in a stream, or frequently changing the water, they could be cleaned. With tubs, it would perhaps be best to fill them with shavings, and burn the interior before soaking.

About Lucern.—"H. S. S.," York Co., Pa. Lucern is not a humbug, but a most valuable forage plant, if rightly treated. It should have the very best land; let it follow a hoed crop, such as corn or potatoes. Sow in drills 30 in. apart, or the width of your horse hoe, about 10 lbs. of seed to the acre. Keep it well cultivated until it gets a good stand. You may cut two crops the first year, and four or more afterwards. If you can give it liquid manure, it will pay. It will succeed in your climate, and is an excellent soiling crop. It is often called Alfalfa, and Chilian Clover.

Grafted or Budded Trees.—"J. H. P.," Ashland, Va., asks about the relative advantages of budded, and root-grafted trees. As he does not specify the kind of tree, his question can only be answered in general terms. A skillful nurseryman will produce a good tree, it may be by budding, or by grafting. He will sometimes be compelled to bud, and at others to graft. If the tree is a healthy one, and has good and abundant roots, it makes no difference how it is produced. Our correspondent asks, if in root grafting, more than one good tree can be made from a seedling stock. Yes, if the stock is a good one, and the grafter understands his business. It makes but little difference how the tree is produced, if it is well furnished with roots.

White Mould on Trees.—"J. H. P.," Alexandria, Va., has found upon the roots of trees received from the nursery, "something resembling frost or a white mould." If this is examined by a magnifier, it will doubtless prove to be a lot of woolly plant lice. He should send such trees back to the nurseryman. It is a plant louse known in England as "American Blight," though it originated in Europe. A stiff brush, with strong soft soap solution, will kill it.

Salt for Weeds.—"S," Poplar Ridge, N. Y., says, with reference to the Bind-weed, described last July on page 292, that one of his neighbors finds this a most obstinate weed, and proposes to apply salt very thickly. "S" says that he has patches of the old Day-lily, and of Privet in his grounds, and asks our opinion as to the use of salt to destroy them. That it is possible to so poison the soil by applying salt, and other articles to prevent the growth of weeds, we do not doubt. The trouble is, that the soil will be unfitted for the growth of useful plants also. So far as we are aware, nothing can be applied to the soil that will discriminate between weeds and useful plants. The plant we regard as undesirable, and call a weed, follows the same laws of growth as the desirable or crop plants What will prevent the growth of the one, will also unfit the soil for the other. We have stated often, and repeat once more, that we have never yet met with, or heard of a weed, that can grow without leaves, and that we know that persistent cutting away of all growth above ground, will exterminate the most obstinate weeds. The trouble is that the cultivator gets tired, and gives out before the weeds do. Let him persevere in his strife, and he will conquer.

See the Supplement

for the choicest assortment of premiums, for new subscribers to this paper, ever offered.

Gems and Gem Irons.—"B. S.," Washington Co., Md. Gem pans or gem irons are cast, and can not be readily made by a blacksmith. They are sold at all house furnishing stores, and by the dealers in stoves. Some of them are made as a series of half cylinders, and others are circular in form.

Cotton — Butter — Lard. — A gentleman interested in the oil trade informs us that of late the makers of hogus butter, known as oleomargarine, have found a method by which they can make use of cotton-seed oil, in preparing their imitation of butter, and that as a consequence, the price of the oil has appreciably risen. Another use of cotton-seed oil, is in the manufacture of hogus lard. Enough beef suet is used to give the needed firmness, powdered bark of slippery elm is added, to give a pleasant odor, and to prevent rancidity, while an appreciable amount of water is worked in to give whiteness and add to the weight. So far as lard goes, if people would get over their prejudice against oil, and use the cotton-seed oil for cooking, they would get a very serviceable and excellent material.

Fairs. -Officers of various State, County, and other fairs, will accept our thanks for invitations to be present. We likewise appreciate the courtesy of those who aided us in presenting in our September number such a complete list of fairs.

Painting Chimneys with Yellow Ochre. —"A. M. B.," Litchfield Co., Conn. The yellow ochre in the "painter's specification," in the July number, is no doubt introduced, because it is cheaper than pure white lead, and because it makes a better priming for the green of blinds, and for other colors, than pure white would be. Any painter would know the proper proportion to use. We know nothing of the ventilating chimney.

"Pond-River Bottoms." G. W. Ramsey, of Kentucky, describes in a recent letter to the *American Agriculturist* the soil known as Pond-river bottoms.—As we judge, a fine, argilaceous silt deposited by the river, and now forming a mass of great depth (30 or more feet). This is a comparatively level tract, liable to overflow, and during the winter and spring is for months under water. It would probably be fertile without manure if it could be mingled with sand, to prevent its baking like a brick, or with organic matter (humus), which would produce the same effect. It may contain some inert organic matter now, in which case a dressing of lime might prevent this baking and cracking, which is fatal to the growth of plants. If the water could be diverted by a dyke, and kept off or let on only when it might be desirable to gain enrichment from the silt, the management of the soil would be easy. Weeds would soon cover it; these, plowed under, would yield the needed humus, lime would co-operate in the conquest, and we might soon see fields of waving grain and grass.

Carl Eduard Lucas.—This most distinguished German pomologist died recently at the school at Reutlingen, the leading pomological school in Europe. Besides publishing several works of his own, he, on its first appearance, showed his appreciation of Fuller's "Small Fruit Culturist," by translating it into the German language, with the consent of the American publishers.

Jersey Cattle, Herd-books, "Herd-registers."—A correspondent asks, "what is the difference between Herd-books and Club-books, as referring to Jersey cattle," Sometime about 1857 or 58, a company of Jersey breeders determined upon publishing a Herd-book, for recording Jersey pedigrees. An editor was appointed, and a volume or two issued, which became the personal property of the editor. The issue of these volumes was continued irregularly, and for a long time the American Jersey Herd-book was the only record we had of Jersey pedigrees, except the private memorandums and herd-books of breeders. There were a good many imperfect pedigrees in it, and perhaps some erroneous ones. Comparatively few Jersey cattle were recorded in it, and when, some ten years later, the subject came to be discussed, it was deemed better by prominent Jersey breeders to begin a new, rather than to use the old herd-book, wherein to record the pedigrees of their cattle. The American Jersey Cattle Club was then formed, and soon embraced most of the principal Jersey cattle breeders. This society exists for the sake of establishing and maintaining an authoritative record of verified pedigrees. Great pains are taken, that none but truthful pedigrees be recorded, and, on the whole, the editors have been very successful. A volume of pedigrees is issued every year. Pedigrees properly verified, are recorded for $3, for outsiders, and $2, for members of the club. It is a great advantage to any fairly good animal to be recorded, and at the present time it is quite likely that one-third of the full-blooded cattle in the country are recorded in this "Herd-register." The rules for admission to registry have been frequently changed. The club is a close corporation, and naturally makes its rules for the advantage of its own members. It has, however, been of great service to the country, especially to breeders of Jersey cattle, and is likely to remain so for a long time to come. Its internal dissensions concern the outer world not at all, so long as a fair record of true pedigrees is made, at a price which breeders can afford to pay.

Sumach.—Each summer brings questions from different parts of the country, respecting sumach. The native sumach has to compete with the imported or Sicilian product, and unless prepared for market in a similar manner, *i. e*, ground and bolted, there is no sale for it in the markets. So far as we are aware, this industry is confined to Richmond and a few other places, where there are mills at which those who gather and dry the leaves, find a sale for them. Unless the sumach can be ground, there is no sale for it except to tanneries near at hand. The three species common in the Middle and Northern States, are used indiscriminately. The "Smooth" (*Rhus glabra*,) the "Stag's-horn" (*R. typhina*,) and the "Dwarf Sumach" (*R. copallina*.) All of these have pinnate leaves, with a strong mid-rib. They are gathered at the end of the season of growth, usually in August, and dried in the shade. They are then beaten with sticks to separate the "branches," as the mid-ribs are called, put up in bales, and taken to the mill.

The Peach Curl.—Mr. Wm. Mair, Ontario Co., N. Y., sends us some diseased peach leaves, and asks for a remedy. The trouble is a fungus, known as the Peach Curl. The parasitic plant grows within the substance of the peach leaves, causing them to lose their normal color, and become much curled, and frequently highly colored. The only remedy is to cut off the affected twigs and burn them, to prevent the spread of the disease. This work can be rapidly done.

Eighty Pages of Reading Matter, and over a Hundred Original Illustrations—that is what you get in the October *American Agriculturist*, and for a less amount, too, than you expend for a single cigar. Send in your subscriptions for 1883 at once.

Planting Peach Seed.—"Z. H. T.," St. John's Asylum, Ky. The best time for planting the seed is in spring, but they must be prepared for planting the winter before. If kept thoroughly dry all winter, and planted or sown in spring, very few will germinate; if exposed to alternate freezing and thawing during the winter, every good seed will grow. The method of treating the seed depends upon the quantity, where operations are large, a bed is staked out and its surface is covered with seed to the depth of three inches, the surface is then spaded over to thoroughly turn under the seeds, and mix them with the soil: this is done just before the ground freezes, and the seeds are exposed to the action of the weather all winter. In early spring the seeds are separated by throwing the surface soil upon a riddle. If not already cracked by the swelling of the seed, the stone will readily separate into its two halves. Only those that have split, or will readily separate by a blow on the edge of the stone with a hammer, are planted. If but a small quantity of seeds are to be planted, they may be mixed with sand, and placed where they will be exposed to the action of the weather all winter.

The Rose-Bug.—"C. B. L." writes from Mass. to say that he has found that Whale-Oil Soap, used according to the directions that accompany the packages, will keep off the Rose-bug or Rose-chafer. He states that he has used it for several years upon grape vines, and also upon peach trees that were badly infested by these insects.

Keeping Apples.—Mrs. "J. B. E.," Mamaroneck, N. Y., writes us that her father has long been in the habit of packing several barrels of apples for late keeping. The varieties were the Golden and the Newtown Pippin. These were packed in tight barrels in plaster. She says, "Plaster of Paris," but we infer that the material was Ground Plaster, or Land Plaster, as we have known of the use of this by others, while Plaster of Paris, or Calcined, or boiled Plaster, has such an avidity for moisture, that it would shrivel and injure the fruit packed in it. Mrs. E. says, that the apples were used through the months of June and July, and retained their fragrance and flavor most perfectly. By packing in this manner, they had winter and summer apples (Early Bough,) at the same time.

New Cover, new Type, new Artists, new Engravings, new Writers — "Excelsior" is our motto for 1883 and ever after.

Trees to India by Mail.—A Western nurseryman writes us, that few people are aware how far young trees can be sent by mail with safety. Young seedling Evergreens are sent to England and the Continent, and deciduous trees much further. A package of young trees, of *Catalpa speciosa*, packed nearly dry, was sent to India with directions to bury the trees for 10 days after their arrival. The Conservator of Forests wrote that the trees opened, perfectly fresh, but he buried them for five days, and planted them; they all grew finely.

Mildew in French Vineyards.—The daily papers publish some remarkable horticultural news, but one New York paper is ahead of all competitors in the following: "The American vines which have been set out in France in place of those which the phylloxera has destroyed are said to be causing much disappointment by their susceptibility to mildew, a disease which they brought with them, and which has been hitherto unknown in France. It is said to have worked havoc already in the southwestern part of the country, and to be spreading everywhere among French vineyards. It is impossible to say how much truth there is in this statement. There are as many conflicting reports about the French vineyards as ever were circulated about a Delaware peach crop." It *is* "impossible to tell how much truth there is in this statement," for does not the old proverb say: "that which is wanting can not be numbered." The idea that the mildew so destructive in European vineyards came from this country with American vines, has the merit of originality. Taking up the first French work on vine culture at hand, Dubrieul's, we find full descriptions of the malady, and figures of half a dozen implements for applying sulphur, the ready remedy. This work was published a quarter of a century ago, at a time when American vines and phylloxera were not known in Europe. Indeed, our knowledge of mildew, and of the manner of treating it, are derived from France.

Root Crops.—There is little to do with the roots, but to go through them, pull conspicuous weeds, and see them grow. Of late years, caterpillars have been getting more and more abundant on beets, mangels, carrots, and even turnips. It would be quite worth while to experiment with some means for their destruction, for in a short time they may multiply so as to imperil the crops. The use of poison is dangerous, for cattle will eat the tops. Borax, white hellibore, sulphur, road-dust, are innocent, and fatal to many insects.

Size of Mail Packages.—Our friend Robt. Douglas, Waukegan, Ill., writes us with reference to an article last month on sending plants by mail, that packages to Great Britain and Colonies, must not exceed eight inches in length, or eight ounces in weight. He has had parcels returned, for being over the proper length. Those who send plants abroad should note this.

The Basket Worm, also called the "Drop Worm," appears to still be a novelty in many localities. We have figured it several times, and now need only to say that it is a caterpillar, which makes itself a covering of the leaves, bits of twigs, or the thorns of whatever tree it happens to be on. Incased in this covering, it escapes the birds, and it travels from twig to twig, carrying its house and feeding as it goes. The female never leaves her nest, but deposits her eggs and dies there. Being thus protected, there is but one course of treatment, hand-picking. This should be done this autumn. If taken in hand at first, the task is slight, but few or many, the only course is to collect, and burn all.

Bound Copies of Volume 40 (1881) are now ready. They are neatly bound in our uniform style, cloth, with gilt backs. Price at the office, $2. If sent by mail $2.30. We can usually supply, at the same rate, any of the 25 previous volumes, or from volume 16 to 40 inclusive. Any *ten* or more volumes, in one lot, will be supplied at the office for $1.75 each; or be forwarded by mail or express, carriage prepaid, for $2 each.

About Celery.—"E. J. B.," Ill. Your questions are well put, and we will endeavor to answer them well in advance of the time. All that you have to do with the plants during summer is to keep them free from weeds, and to promote their growth by proper hoeing.

VICTORIES UNEQUALLED

The **only** machine that received an award on both Horse-power and Thresher and Cleaner, at the Centennial Exhibition; was awarded the two last **Gold Medals** given by the New York State Agricultural Society on Horse-powers and Threshers; and is the **only** Thresher selected from the vast number built in the United States, for illustration and description in "Appleton's Cyclopedia of Applied Mechanics," recently published, thus adopting it as the **standard** machine of this country. Catalogue sent free. Address

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30 DAYS' EXTENSION.

The PRONOUNCING DICTIONARY of 50,000 Words, offered as a Premium for subscribers in the September No. of the American Agriculturist, p. 388, has proved to be such a desirable Premium, that we have concluded to extend the time, during which it can be secured, from September 20th to October 20th.

REMEMBER, therefore, that all new subscribers received before October 20 can have, if they so desire, the Pronouncing Dictionary on the terms stipulated on page 388 of the September American Agriculturist. That is to say, we will send, post-paid, the Pronouncing Dictionary for every new subscription at $1.50 received before October 20th.

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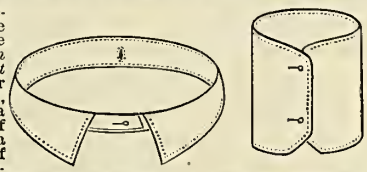

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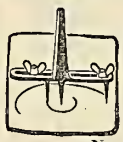

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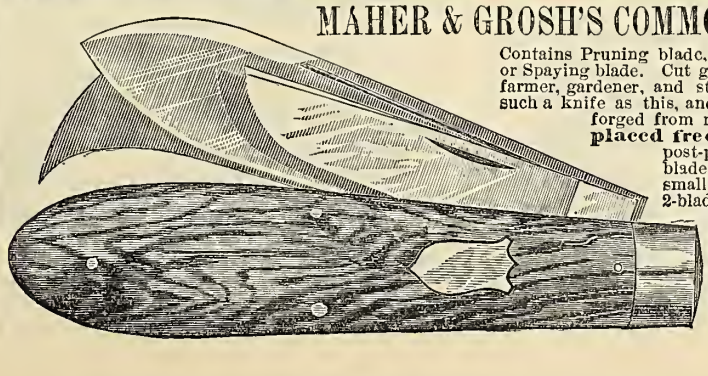

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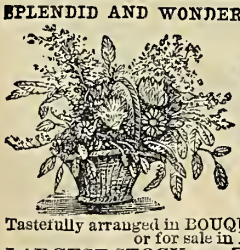

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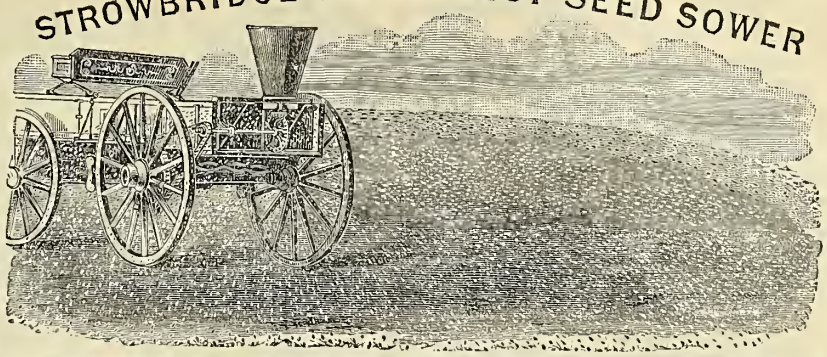

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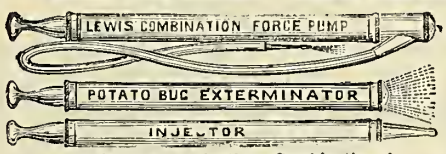

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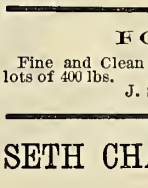

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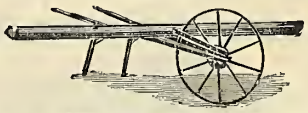

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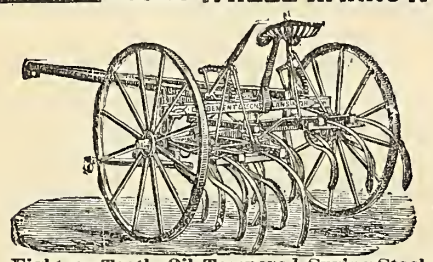
LANSING SPRING TOOTH WHEEL HARROW



Eighteen Teeth, Oil-Tempered, Spring Steel, Fully Warranted; Frame Work of Best Material, not Complicated.—Can he set up without any difficulty. An old man or a boy can do more work in a day with this Harrow than an able-bodied man with an old-fashioned Harrow can in two. Soil thoroughly pulverized—not packed, but thoroughly loosened and ready for seed. So arranged that it may be tilted while in motion, adjusting itself promptly and successfully to all grades and conditions of soil—stony, stumpy, rooty, rolling or even.

No tugging; can easily be set, with one hand, at any depth, while in motion.

Besides possessing the above named superior points as a fallow tool, it can easily be adjusted by a boy of twelve, in five minutes, as a first-class Corn Cultivator.

Destined to be the leading Harrow of the Empire State. Send for testimonials and circulars.

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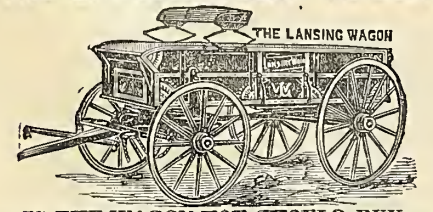

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For cooking feed for stock, heating water, etc.

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Dallas Wheat.

After thoroughly testing this variety, usually known as the "Bill Dallas Rust Proof Wheat," we unhesitatingly pronounce it the surest cropper yet originated, having lost only one crop in ten years, and that from the fly or some insect, not rust. We have never known it to rust. It is classed by millers as between a white and amber wheat, yielding first-class flour. It appears to be a hybrid—a smooth-headed wheat with almost invariably some bearded heads cropping out amongst it. The crop just harvested shows the largest yield of any variety in this section, the yield so far reported being from 21½ to 30 bushels per acre.

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2 Bushels Sacked.....$5.00
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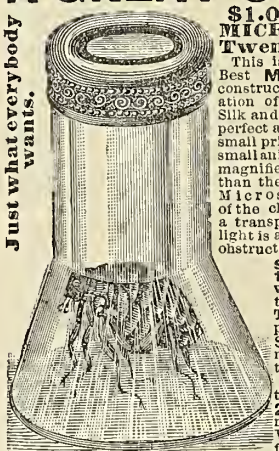

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Enters upon its second year with a reputation never before achieved by any other Plow in a single season. Probably no manufacturer ever put out a Plow that from the start was so favorably received, or that was so perfect in its construction Our first year's sales are unprecedented, both for the large number of Plows sold, and the uniform expressions of praise from every farmer who has used one. We claim for the New Remington Clipper:—Patent Carbon Metal—Improved Jointer with Steel Blade—Anti-Friction Landside—Changeable Shin—Perfection in Shape—The Lightest Weight—Easiest to Handle—Lightest Draft and Steadiest Running of any Plow in the Market. SEND FOR PRICES.

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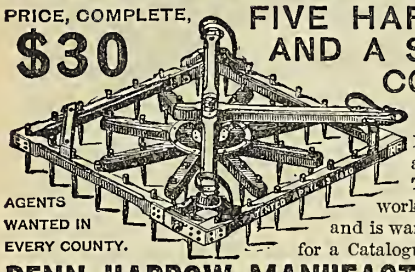
PRICE, COMPLETE, **$30**



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Made of the best white oak, with steel teeth, well painted, and in every way first-class. With our improvement it is **THE MOST CONVENIENT,** and will do double the work of any other Harrow and save the Farmer half his labor, and is warranted to do all we represent or money refunded. Send for a Catalogue and see what farmers say about it. Manufactured by

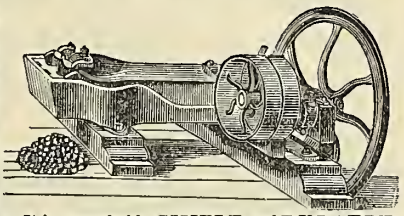
PENN HARROW MANUFACTURING CO. COOPER'S POINT, **CAMDEN, N. J.**

CHEAPEST AND BEST FERTILIZER.

FOLLOW NATURE.

Which uses **GROUND LIMESTONE** in making the Soil. Every Farmer can prepare his own **Fertilizer** with an ordinary Horse-power by using

FOSTER'S COMBINED CRUSHER AND PULVERIZER.



This machine takes a lump of limestone or any other mineral 3 to 5 inches square, and crushes it and pulverizes it at one motion to any required fineness **without the use of burr stones or rollers.** Farmers drill it or sow it just as it comes from the machine. After six years' trial, ground **Raw Limestone** has been found to be worth three times as much as **Burnt Lime,** and with this machine it does not cost one-half as much to make. While Phosphate, Bone Dust and other Fertilizers must be renewed every one or two years, by actual trial **Ground Raw Limestone** will last four years. By burning LIME you destroy 40 per cent of carbonic acid, which is **PLANT FOOD.** An analysis of the Virgin Soil Blue Grass Region, Kentucky, shows 2,464 carbonate of lime, 0,319 phosphoric acid, or in other words, Nature uses EIGHT TIMES as much GROUND RAW LIMESTONE as Phosphates or Bone Dust in making good lands. The reports from Maryland farmers, **July, 1882,** show conclusively that it is the **Cheapest** and **Best Fertilizer.** Any farm hand can run the machine. It is remarkably **SIMPLE** and **DURABLE,** and is ready to attach to any kind of power as we ship it. The same machine answers for making macadam for Roads and Ballast for Railroads, by simply changing Dies. ONE, THREE and FIVE-HORSE-POWER. Price **$190, $390,** and **$570.** Address,

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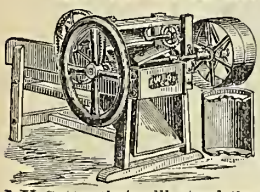

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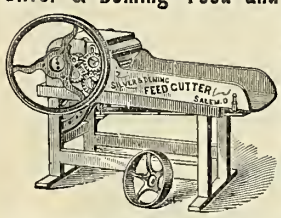

We manufacture eight sizes Feed Cutters for hand and power. Our power Cutters have our Pat. Safety Fly Wheel, which prevents accidents so common to other Cutters. We are the original patentees and manufacturers of a Safety Fly Wheel, and ours is the only one that is a success. We also manufacture a special **Ensilage Cutter.** This machine is large and powerful, and will be found in every way adapted to cutting green corn-stalks for ensilage. Send for Illustrated Circular and Price List of Feed and Ensilage Cutters. SILVER & DEMING MFG. CO., Salem, Ohio.

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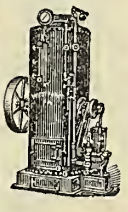

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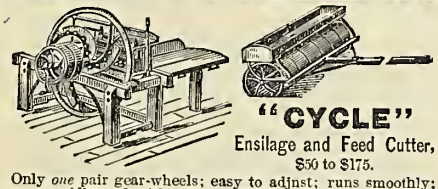

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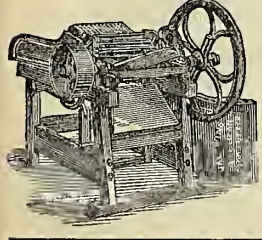

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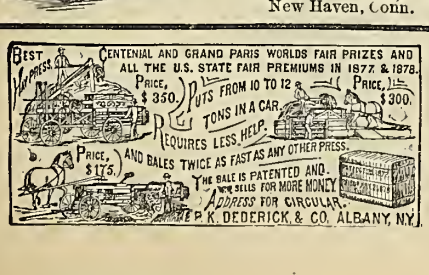

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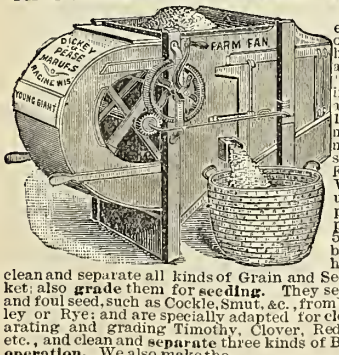

Have no equal. They obtained the highest award at the 'Centennial' in 1876, and at Paris in 1878. These mills are made in nine sizes, for Farm and Ware-house use (hand or power). Capacity from 50 to 500 bushels per hour. They clean and separate all kinds of Grain and Seed for market; also **grade** them for **seeding.** They separate Oats and foul seed, such as Cockle, Smut, &c., from Wheat, Barley or Rye; and are specially adapted for cleaning, separating and grading Timothy, Clover, Red-Top, Flax, etc., and clean and **separate** three kinds of Beans at **one operation.** We also make the "Peerless Corn Sheller," Cast Iron Field Rollers, &c. Address, **DICKEY & PEASE,** Manufacturers, **RACINE, Wisconsin.**

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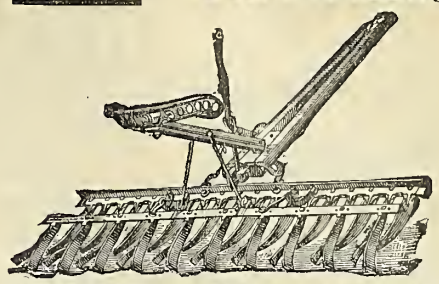

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The **"ACME"** subjects the soil to the action of a **Crusher** and **Leveler,** and at the same time to the **Cutting, Lifting, Turning** process of double rows of **Steel Coulters,** the peculiar shape and arrangement of which gives **immense cutting power.** The **entire absence of Spikes or Spring Teeth** avoids pulling up and scattering of rubbish. It is **especially adapted** to inverted sod, hard clay and "slough land," where other Harrows utterly fail, and also works perfectly on light soil.

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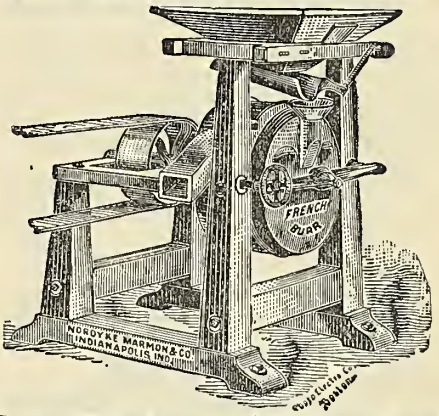

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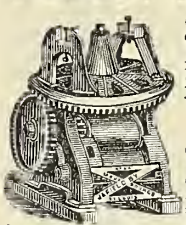

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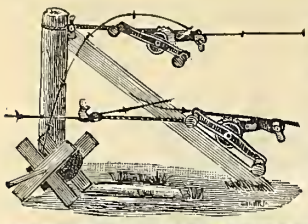

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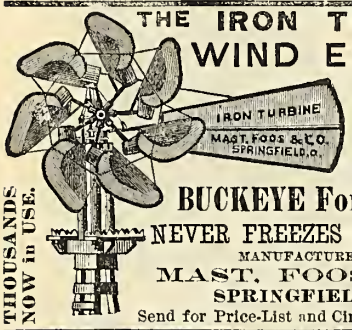

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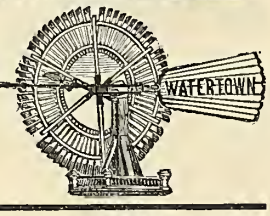

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It is perfectly self-regulating, and presents no unnecessary surface to the wind. Pronounced by millwrights and mechanics to be superior to all other mills made. Do not buy until you have investigated the Champion. All information regarding the mill free.

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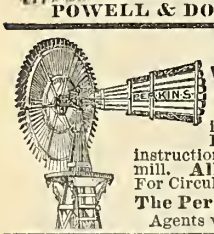

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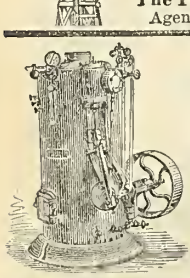

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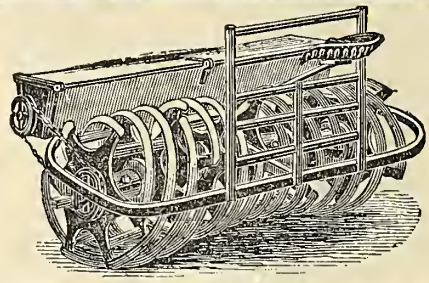

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Over 100,000 Acres have been put into Crops by these Machines.

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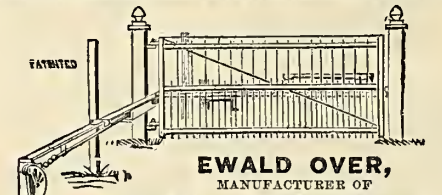

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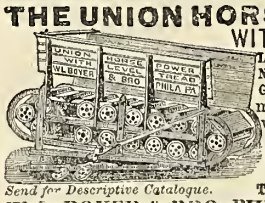

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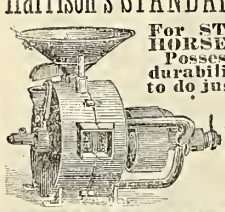

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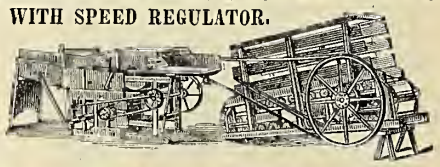

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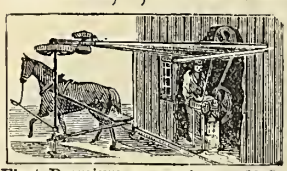

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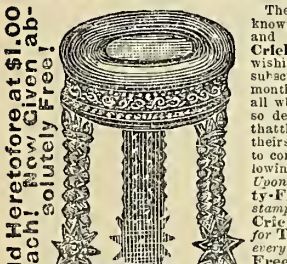

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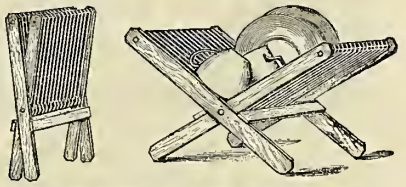

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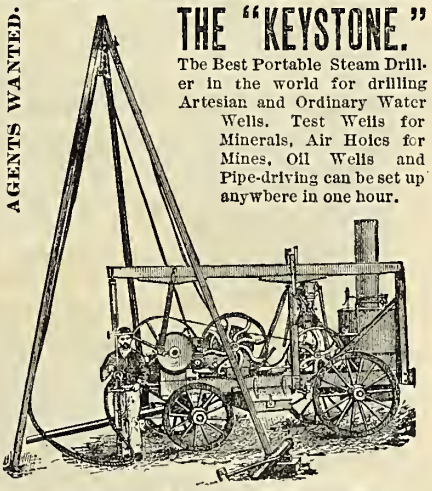

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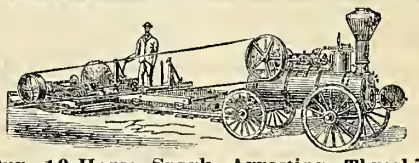

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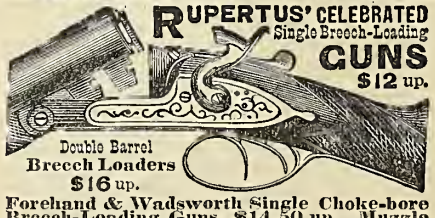

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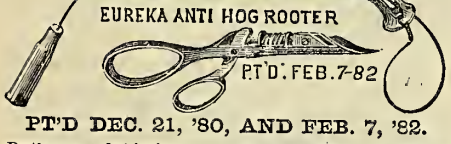

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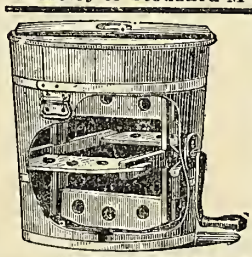

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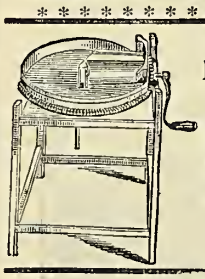

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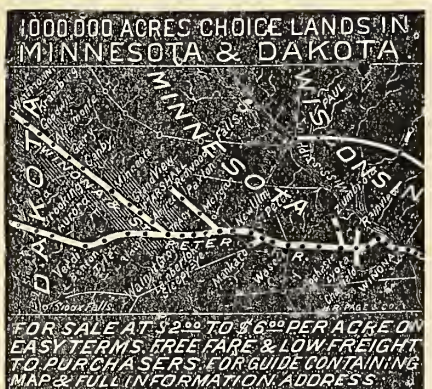

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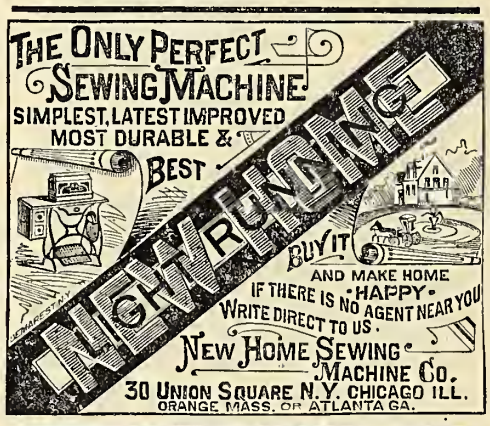

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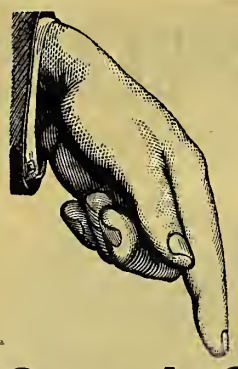

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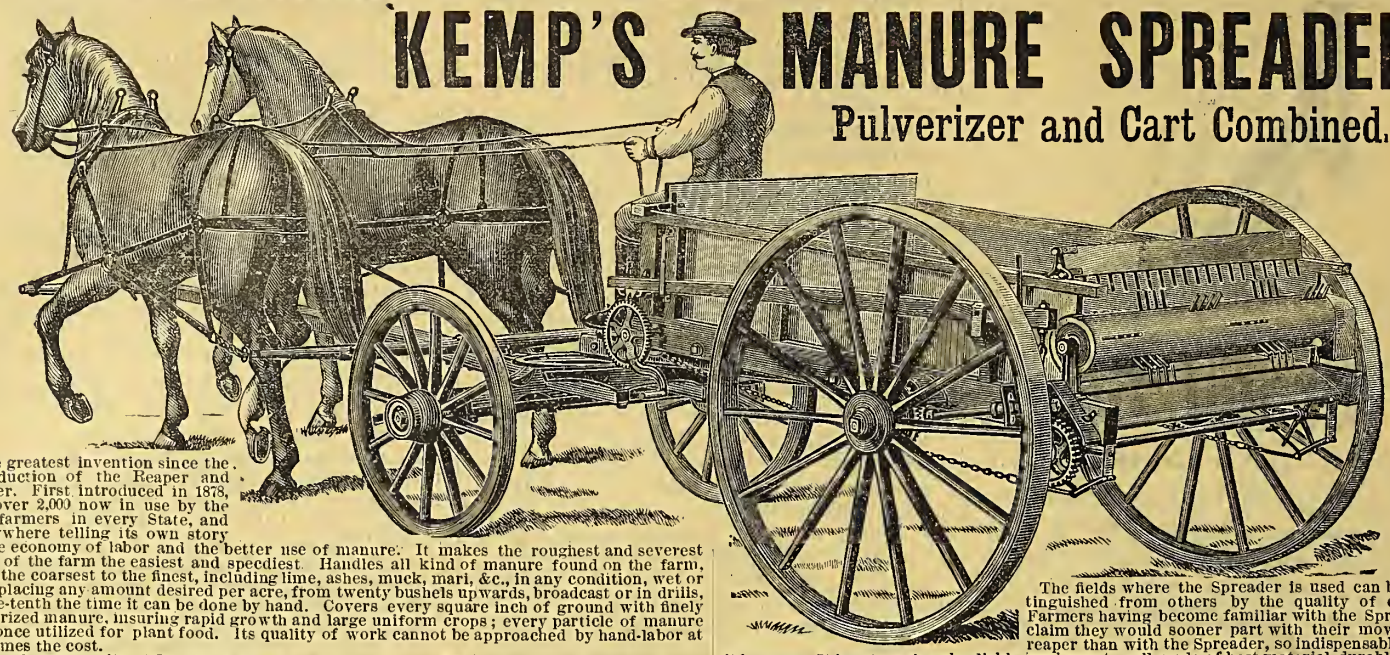

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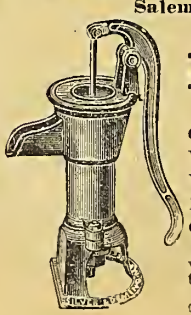

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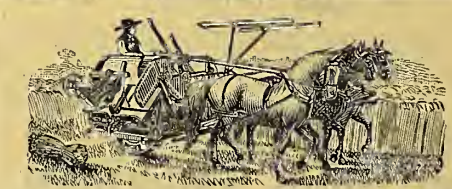

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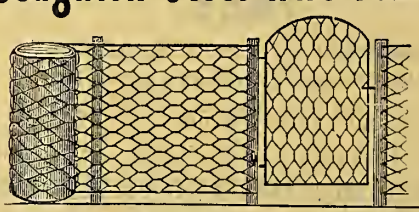

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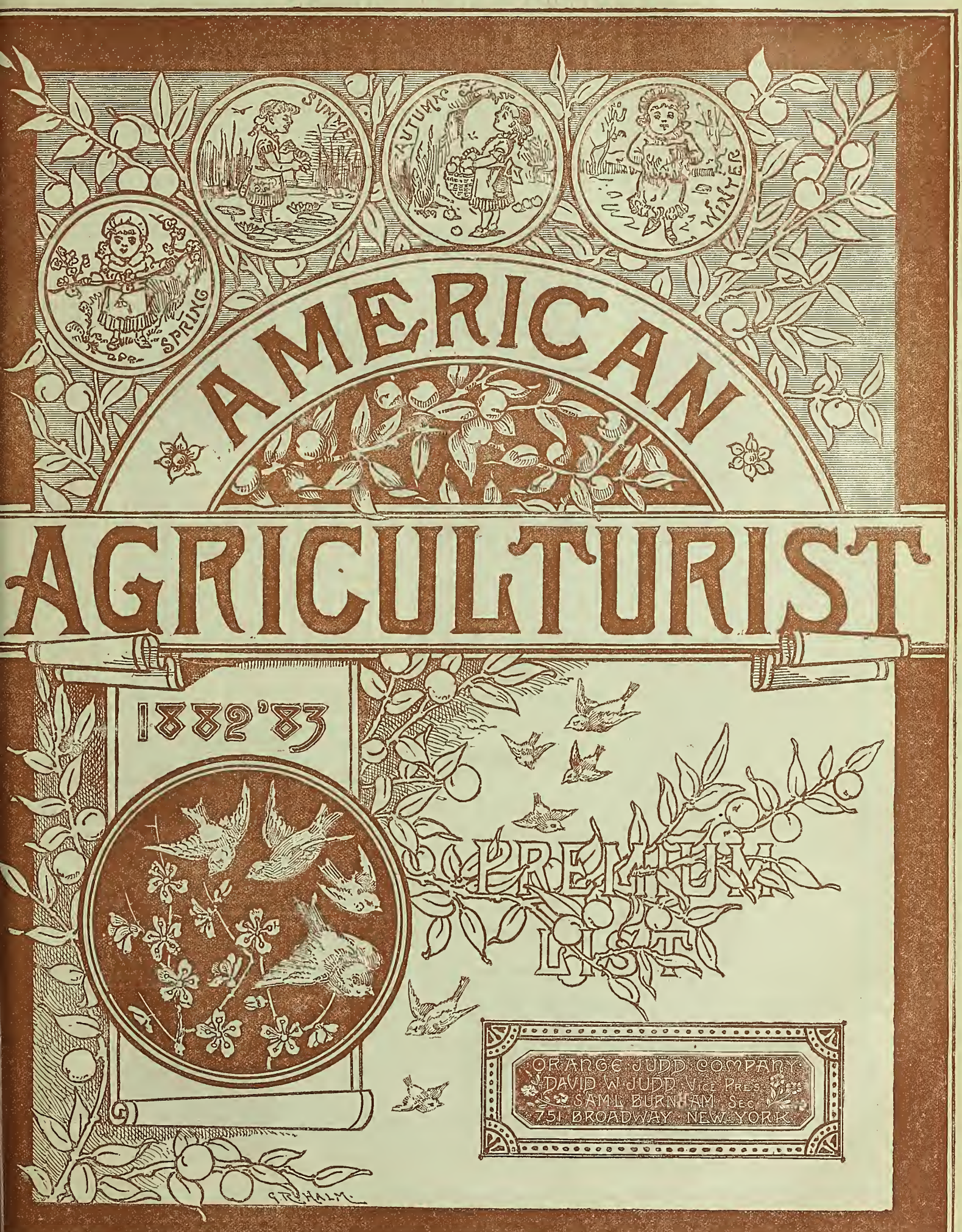

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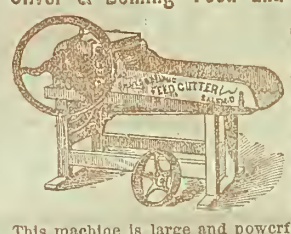

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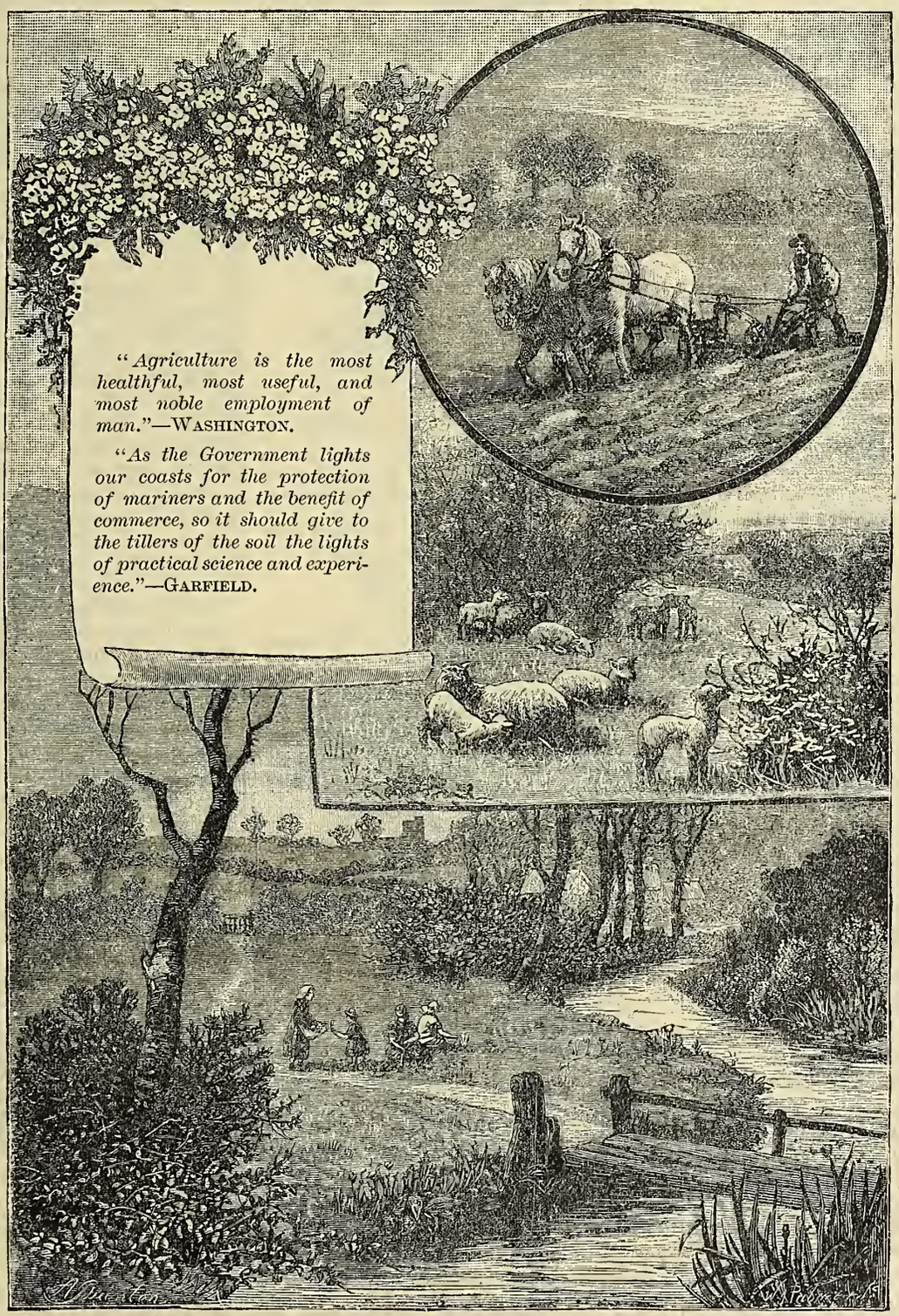
American Agriculturist.

PREMIUM LIST.

SUPPLEMENT TO OCTOBER, 1882.

Chat with Readers.

The picture on this page needs no comment. The Artist has made it speak for itself, and all will enjoy the pleasing sketches of varied rural scenes. — The Vignette contains two notable sayings, the first of which has stood at the head of every issue of the *American Agriculturist* during *forty-one years* past, and may well stand there a century to come! WASHINGTON, himself an actual and practical farmer, from choice, expressed his own deep convictions, but not the sentiments of the people generally, in after years, albeit nearly half of them have been engaged in some department of Agriculture. Judging by their words and acts, comparatively few farmers would hesitate to embrace any opening for their sons, if not for themselves, to escape to the pursuit of trade, traffic, or of professional life. Most farmers, and their wives, have been gratified when a daughter has been wedded, or affianced even, to some one engaged in mercantile or professional pursuits, instead of to an honest, industrious, promising young farmer. The rural homestead has been all aglow with pleasant excitement on the occasion of the departure of a son to enter even a low clerkship with some distant merchant. The feeling, actual, is, "Charlie, or James, or John, is going to take a higher place in the world than his humble parents have attained." Is this feeling well grounded, and Washington's sentiment only a "glittering generality"? The error has often been shown in our columns, and we add but one statement here: Of all young men who enter upon business life, many fail entirely, and scarcely five in a hundred, on the average, rise to be their own employers; while comparatively few succeed in earning a salary sufficient to give themselves and families a comfortable home. On the contrary, ninety in every hundred of those who go earnestly into farming as a permanent pursuit, become the owners of a portion of the earth's surface, with a dwelling of their own upon it. We speak here especially of our own country; nearly the same may be said of France. But....



A Change is coming, in fact has come this very year of Grace. Never before has the great mass of Merchants, Manufacturers, Brokers, Stock-speculators, in short, of every class down to the humble day laborer and factory operative, taken so deep an interest in the Agriculture of the country. They study the telegrams and weather reports, anxious to learn each day how wheat, corn, grass, oats, etc., are being affected by sun or storm. The early frosts are noted by all, less with regard to their own clothing and fuel supply, than for their influence on the various growing crops. The results of the past three or four years, culminating with this year, have unmistakably demonstrated to the dullest mind that Agriculture is the real basis of prosperity in all other pursuits, and surely no other employment is more ennobling than this. We now only add that the above fact has strongly tended to exalt Agriculture in the opinion of all classes, and has lead and is leading multitudes to leave other unsatisfactory, uncertain callings, and go into soil culture. The great West has been recently, and still is, bidding welcome to tens of thousands of such persons; this is well, and we rejoice that it is so.

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The wonderful progress of the *American Agriculturist* during the past twenty years of its existence, is well known—how its circulation has at times run up toward *One Hundred and Fifty Thousand*, and how its readers have averaged for the whole time over One Hundred Thousand; how it has absorbed twenty-three other newspapers, extended its circulation through other lands as well as our own, (now counting, for example, its subscribers in far off Australia by the thousand,) and becoming the recognized leading Journal of the world, for the Farm, the Garden, and the Household.

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The explanation of the success of the paper is to be found in a rigid adherence to the following code of principles or rules of conduct which the Managers at first laid down for themselves and their associates.

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The American Agriculturist During 1883.

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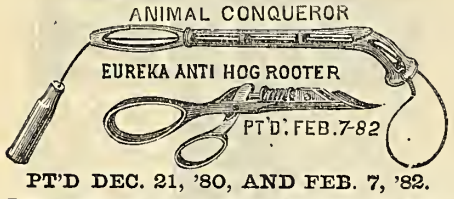

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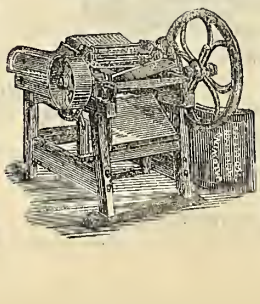

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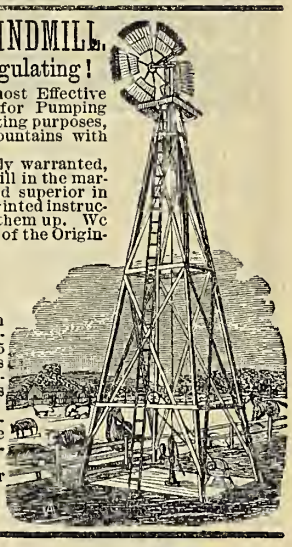

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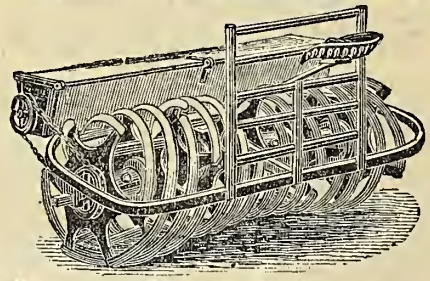

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Give the Boys a Chance.

Farmers' boys are as full of life and ambition as any boys. They see visions in the future of prosperity, influence, money, and reputation. They see boys who have been clerks in the village stores, carpenters, bridge-builders, compositors, machinists, employés of financial operators, merchants, bankers, etc. They at once mark their great superiority in some things: in a knowledge of the world, in quickness of thought, and, likely enough, in wickedness also. Your boys want to get away too, or see their *way out*, some how. If there is money to send them to school, that satisfies them; if the condition of going is that they shall learn a trade, they will learn one; if they must get a self-supporting place in store or shop, on a canal boat or anywhere else, they will find one. Is it because they hate farming and work? No, indeed. Nine-tenths of them love the farm and will eventually return to it, or will buy another as soon as they have made money enough.

The best *farm laborers* are men who have been born and bred on the land they till; the best *farmers* are those who have been in business, or who have been successful in some trade, or who have been to sea, or have seen the world and know something of trade and commerce, who have expanded ideas, and who are readers, and lovers of books. They are up with the news of the day, abreast with agricultural progress, have their notions about political economy, free trade and protection, coöperative dairying, creameries, new kinds of stock, etc.; they put up silos, get new tools, and show an earnestness for progress in some way—in every way—and really do progress. They not only make money by legitimate farming, but are gradually put forward as prominent men in the community, given township offices, sent to the legislature, and all that. All because their natural ambitions were not curbed, because their spirits were not broken by the wretched poverty of ideas which prevails on too many farms.

Which do you think most of, the farm or the boy?—If the boy, then give him a chance: give him every opportunity in reason to see and know what is going on in the world about him; give him good books; trust him at the store, and to be "off" evenings, if he will only trust you with the knowledge of all he does. He will do this and have no secrets, if his father is worthy of confidence. You must sympathize with him.

There is not room on the farm for half the boys. Some must go to the town, to sea, to college. Do not grieve over it. It is better for them and for the world, and really better for the farm. Make your boys wide-awake men, and encourage them in seeking after knowledge and plans for improvement in every way. With books and papers, and good company, and some knowledge of outside things, a boy will choose his own avocation, succeed in it, and in after years come back to bless the old Homestead, and the old folks.

THE GLEANER GIRL.

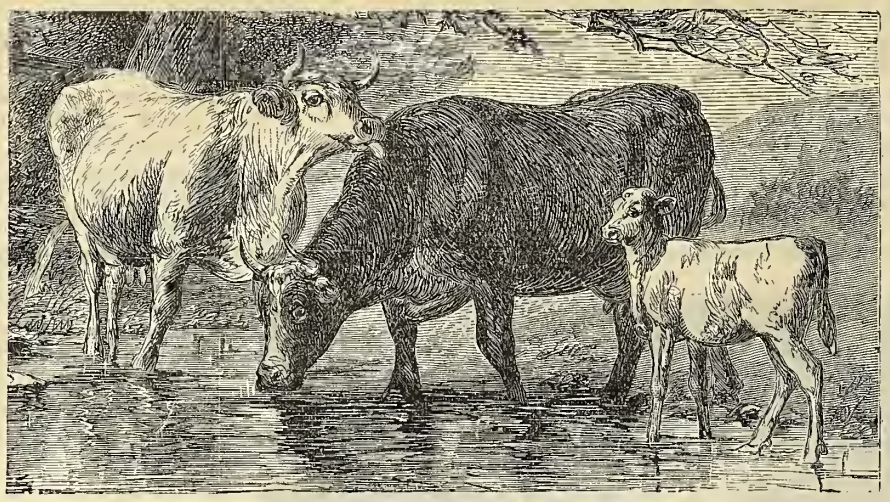
If you think you must keep the boy on the farm for your own sake, give him a personal interest in the farm, a share of the cattle and sheep, pigs and poultry; get him to keep his earnings or invest them, to have a saving's bank account, and so anchor him, not by exhibiting your authority or purchase, but by his own love for you, and by his own interests.

Stammering—Its Cure.

Stammering or stuttering varies all the way from a slight impediment in the speech to a difficulty of utterance that is painful to those who witness it. Authorities agree that it is, as a general thing, a nervous affection, and the successful methods of treating it are those that give the patient control over those nerves and muscles concerned in articulation. It is a singular fact that those who stammer most violently can usually sing without impediment. We had the pleasure of a visit, a few weeks ago, from the eminent Dr. Dawson Turner, of London, Eng., who told us of a method by which he had cured confirmed cases of stammering. It being a nervous affection, everything tending to excitement should be avoided. Talk to the patient quietly, and ask him to sit down with you where no others will be present. It is important to divert his attention from the organs of speech, therefore show him how to shut his hand with the forefinger only extended, as one would naturally do in pointing to a distant object. Engage his attention as much as possible on the proper position of the fingers. Then ask him to repeat any sentence after you, following you in making a tap with the finger after each syllable. The taps may be made by the forefinger of the right hand in the palm of the left hand, but preferably on a table. Dr. Turner told us of his cure of the engineer on an ocean steamer upon which he was a passenger. The engineer was highly esteemed for his skill, but his inveterate stammering so interfered with his usefulness, that it nearly unfitted him for his position, as in an emergency he was unable to say what should be said promptly. The Doctor had given the engineer a few lessons with success, and the Captain was much surprised to have the engineer come to him one day with, "Cap-*tap*, tain *tap*, the *tap*, pro-*tap*, pel- *tap*, ler *tap*, is *tap*, bro- *tap*, ken *tap*, and *tap*, we *tap*, must *tap*, lay *tap*, to *tap*, for *tap*, re-*tap*, pairs *tap*." To have given this message in his usual manner would have required a long time and a severe struggle. This illustrates the method. Some quiet friend should first practice with the stammerer alone, until he can speak without difficulty, and then gradually accustomed him to the presence of others.

An In-grown Nail.—Much suffering is due to the corners of toe-nails growing into the flesh. The remedy is very simple. It is a mistake to cut the nails short at the sore corners; if the nail is long, cut the upper edge straight across, or in a crescent shape, the crescent in the center, *leaving the corners untouched*. Then scrape the middle of the nail, for its whole length, quite thin. The scraping may be done with a knife, but much more readily by the use of a bit of freshly broken window glass. The center of the nail should be made so thin that a slight pressure upon the corners will bend it. In some cases it may be well to put a little lint or cotton under the corners of the nail, to aid in the bending. Of course the avoidance of tight boots or shoes will suggest itself to all.

Our Premium Articles, beginning at Page 444, present sufficient variety to suit every taste.



KEEP COOL.

What Do You Sleep On?

Do you sleep upon a feather bed? We hope not. Years ago a feather bed was supposed to be an important part of a house-keeping outfit. If you have a feather bed, put it in the spare room, lock the door, and lose the key. A curled-hair mattress of the best quality makes one of the most desirable couches, but curled-hair is expensive and all cannot afford it. The next best thing, indeed, almost as good, is afforded by that plant, so dear to every American farmer—Indian corn. Whoever grows corn, need not lack for the most comfortable of beds. We are aware that ticks are sold filled with husks with the stem part left on. A bed of this kind is not the kind of husk bed we have in mind. To make the very best possible husk bed, save the husks from the green corn as it is daily used. The husks are coarse, and should be slit. An old-fashioned hatchel, where there is such an implement, answers well, but a substitute can be made by driving a few large nails through a board, and filing them sharp. Drawing the husks across these will slit them into shreds an inch or less wide. An old carving fork may be used to slit the husks. Then put them to dry in a garret or some airy loft. If the green-corn season is past, then, at the regular husking of the field crop, secure a stock for mattresses. Reject the weather-worn outer husks, taking only the thin, papery ones.

What To Do With Cuts or Wounds.

Farmers who live far from surgical aid, and those who go off on hunting and other excursions, are often at a loss what to do when an accident occurs. In many families some kind of a liniment or application is kept which is regarded as an universal remedy, but it is often the worst thing that can be applied. In all cases of wounds, recollect that nature makes an immediate attempt to repair damages, and the best thing we can do, is to give her a chance, and aid her.

In the majority of wounds, where no important artery or vein is cut, all that we have to do, is to bring the edges of the wound together and hold them there, and if the wound is not a ragged one, healing will commence at once. Should, however, the edges of the wound be much torn, then use cold-water dressings, until surgical aid can be had; these may be lint, or any soft cloths, wet in the coldest obtainable water and kept wet over the wound. Should an artery be wounded, the fact will be known by the blood coming out in jerks or spurts, and one must make use of such anatomical knowledge as he may have. Keep cool. If the wound is on a limb, applying a compress somewhere between the wound and the body will stop the bleeding. Tie a handkerchief around the limb, and use a stick to twist it in such a manner as to bring a pressure on the artery. A wounded vein is much less difficult to manage. A bit of lint bound firmly over the wound will usually stop the bleeding. In all such cases, an abundant use of the coldest water is advisable. Perfect quiet is essential; make the wounded person keep absolutely at rest, and having despatched a messenger for the nearest surgeon, apply cold-water dressing, avoiding the use of all "Balsams," "Pain-Killers," "Reliefs," and the like, which are of a highly inflammatory nature, though wounds sometimes get well in spite of them.

The Value of a Bit of Wire.

All who use vehicles of any kind, and farmers especially, should know the great value of a bit of copper wire in making a large variety of repairs. Indeed, its utility is not confined to the farm. We never set out upon a journey, or even on a short fishing excursion, without making sure that copper wire is placed among the essentials of the outfit.

Perhaps the most convenient size for general use is No. 16—about the size of an ordinary knitting needle, but a size larger, and one smaller, will very often come handy. The wire may be made into a small coil, or it may be wound upon a spool, or even a stick. Before it is coiled or wound, it should be made ready for use by straightening out any kinks or crooks there may be in it. This is done very quickly by making one end of the wire fast to any convenient strong nail; then take one turn of the wire around a smooth stick of hard wood—a hammer handle answers well—and by walking backwards, allow the wire to slip tightly on the stick. This will make it perfectly smooth, when it may be wound up. A coil or roll of the wire should be put in every carriage or wagon, and every mower, reaper, grain drill and other farm machine be similarly provided. Even the plow-man, if he values time, will take care to have a piece of the wire either attached to the plow or in his pocket. He can then mend a trace chain without spending several hours in going to have a loose-link put in; and even a broken whiffle-tree may be made serviceable in a few minutes. There is scarcely any part of a harness that can not be mended by the use of the wire, and often so completely that no further repairs will be needed. The number of breaks in farm and household implements of various kinds, which may be remedied and the article made as good as new by the proper application of copper wire, will be found surprisingly large, when one gets in the way of using it. A friend of ours who was making a journey in his own carriage broke one of the springs when a long way from home; this was soon mended with the wire, and the spring was so serviceable that it was used in this condition after reaching home, until it was convenient to have it repaired by the blacksmith.

In repairing an article of wood or metal, the wire should be wound around it in close coils, each pulled taut in the same manner that sailors apply yarn in "serving" or "woolding." In mending harness, long stitches may be made with the wire.—"Annealed" *iron* wire is cheaper and stronger, and as useful, if protected from rusting.

Remember That

Farm Implements and Machines rust out much more than they wear out. Therefore, whenever a tool or a machine, whether a hoe or a reaper, is laid by for any time, it should be protected from injury by rusting. Take half a pound of lard, add to it a piece of rosin half the size of a hen's egg, and melt them over a slow fire. This may be done in an old tomato or fruit can, or in some other convenient vessel. When completely melted, remove from the stove, and stir with a stick until cold. This makes a soft ointment which may be applied with a cloth, or brush, or a swab made by wrapping a bit of cloth around the end of a stick or a piece of shingle. Whatever metallic tool, or part of a tool put away for the winter, if smeared with a thin coating of this, will be perfectly protected from rust. Not only the coarser implements of the farm, but knives and forks not often used in the household, may be protected. A mere film is all that is required.

Nothing pays farmers better than a little care rightly bestowed upon their implements.

Farmer's Boots, when damp, as they often will be in winter, and taken off at night, will often shrink in drying, and be very stiff and difficult to put on in the morning. If the boots, when taken off, are filled with oats, this will prevent shrinking, and they will dry in their proper shape.

To Make Boots Water-Proof.—There is probably nothing better for the farmer in doing his winter-work than a heavy cow-hide boot made pliable and water-proof by the following composition, which has been in use by the fishermen on the New England coast for over a century: Melt together, Tallow, 4 oz.; Rosin and Beeswax, of each, 1 oz.; when melted, add a quantity of Neatsfoot Oil equal to the whole. Apply this to both soles and uppers, rubbing it in well before the fire.

The Woodwork of Farm Implements.—Crude Petroleum, which is very cheap, is much better than any paint for the woodwork of almost all farm implements. It should be added so long as any is absorbed.

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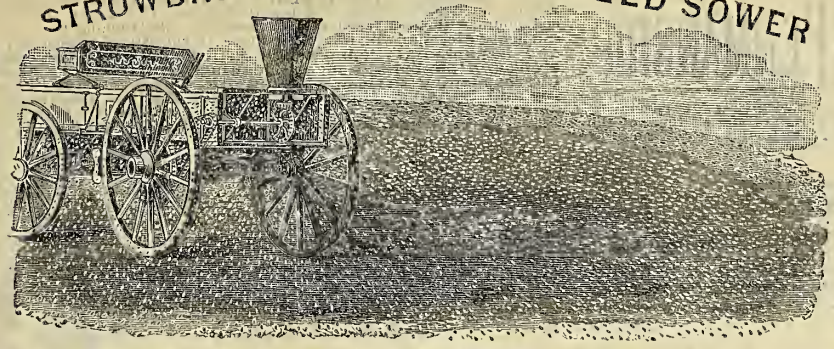

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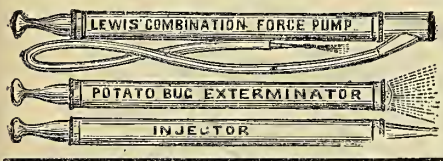

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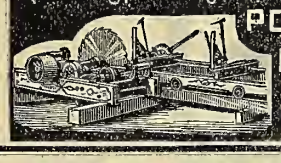

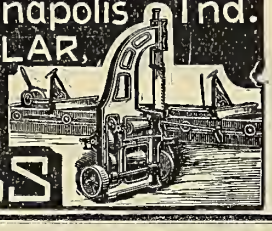

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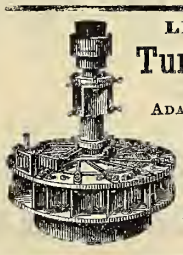

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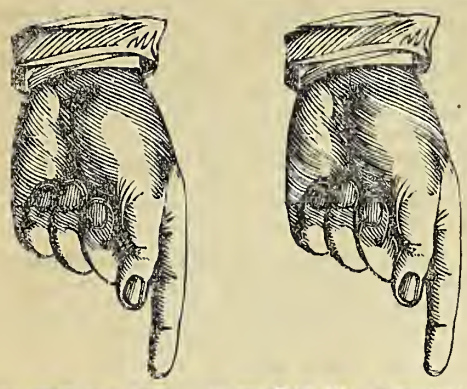

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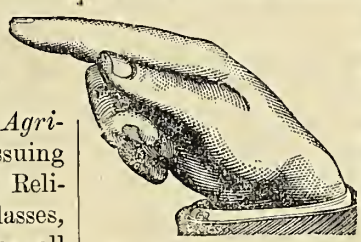

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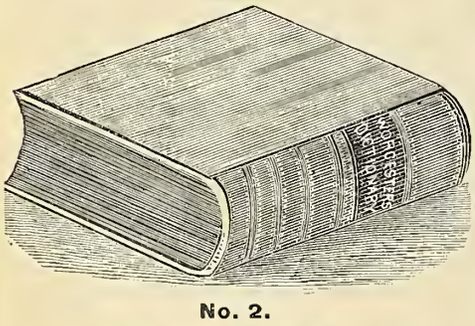
No. 1.

size, splendidly bound in Turkey Morocco, *deep panelled*, beveled edges; full gilt on edges, sides, and back, with Illuminated Title pages. It weighs 12 pounds, contains over **1,400 Pages,** printed in large, clear type, and is Illustrated with **2,500 fine Engravings** on Steel and Wood, by many of the best artists.—And this Magnificent Book includes not only the entire Sacred Text, but a **great deal more,** such as: Maps of Palestine, Jerusalem, Mount Sinai, and many other places of note; a History of the English Bible; full Marginal Notes and References on every page; a large Concordance, enabling one to find any verse or passage desired; a History of the Principal Religious Denominations, and much other useful and valuable information.—It has an elegant MARRIAGE CERTIFICATE, and several pages of FAMILY RECORD in different colors. It is every way a *most desirable Book* to adorn one's Table as well as for constant use, and nothing could be more appropriate as a WEDDING GIFT.—The Receiver's name will be gilt in one line without charge, and at small charge for extra lines.—With all the above qualities, this Bible we supply for $12; OR it will be **Presented** to any one sending a club of **13** subscribers to the *American Agriculturist* at the regular rate of $1.50 a year. Almost any one can easily secure this number, and thus obtain the Bible free of cost, except the freight.

Another Bible, every way like the above, inside and outside, except that the Binding is in French instead of Turkey Morocco, and the side panels are less gilded. This we supply for $10, or **Present** it for **11** subscriptions at $1.50 each.



No. 2.

Only Second to the Bible,

For every Family, is a complete Dictionary, such as WORCESTER'S Great Illustrated Quarto. This magnificent work comprises **1,854 Pages,** of 3 columns each, containing more than **100,000 Words,** and giving the correct Pronunciation of each, with its etymology, and Definitions so amply explained that the book is next to a Universal Encyclopædia. A large number of Engravings help, too, in the information given. New and latest edition.—Weight, 12 pounds. Substantially bound in leather. This is now regarded as the STANDARD AUTHORITY, and so recommended by many of our most distinguished Scholars and Professional men. We can now supply the *New Edition* for $10.—OR we will present one for **12** subscriptions to the *American Agriculturist*, at $1.50 a year each. Receiver to pay expressage, which will be small. To very distant parts of the United States and Territories, it will be forwarded by mail on receipt of 96 cents, to cover postage.

3.—An Abridged edition of Webster's Dictionary, containing **18,000** of the most important words, neatly bound, with 200 engravings, will be supplied and mailed post-paid, for $1;—OR for **2** subscriptions at $1.50 each.

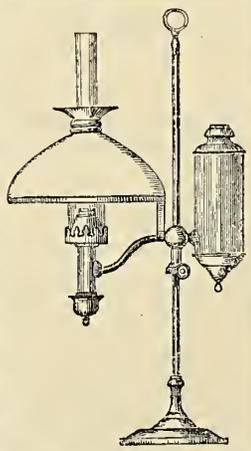
A Most Valuable Library.

4.—Our printer says there is as much *reading* matter (exclusive of advertisements) in a yearly Volume of the *American Agriculturist*, as there is in TWELVE average BOOKS costing $1.50 each (or $18.00).—Each Volume of the *American Agriculturist* contains 750 to 1,000 or more Engravings and Sketches, and thousands of practical articles and items, on almost every subject relating to Rural Life, Out-Doors and In-Doors. The annual Volumes are neatly Bound in uniform style, fine cloth covering and gilt titles, and a complete Index to find any subject or topic.—They are supplied thus bound for $2 per volume (or $2.30, if to be sent by mail). Newly bound copies, printed from the preserved electrotype plates, can be furnished for nearly every year back to 1857.—*In no other way can one get, for the same cost,* so large an amount of practically useful matter for reading and for reference, as to obtain five, ten, or fifteen of these Volumes.—*How obtained* FREE: Any subscriber sending

subscriptions to the *American Agriculturist* at $1.50 a year, will be *presented* with one of the Bound Volumes of the *American Agriculturist*, post-paid, for every *four* old subscriptions, or for every three *new* subscriptions.

What is the Best Lamp?

5.—From long before the days of the "five wise and five foolish virgins" until now, the ordinary light has been obtained by oil carried from its receptacle to the burning point by "capillary attraction."—As the wick is fouled by use, and as the supply of oil varies with every decrease in the level of the oil, all such lamps give a more or less unsteady light, wearisome to the eyes, when not injurious.—Again, the imperfect supply of oxygen in an ordinary wick affects the light materially. But in what is known as the German Student Lamp, the arrangement is such that for every tenth of an inch that the oil falls around the wick a new supply is let in automatically. Further, a central draft of air, inside the wick and flame, produces full, perfect combustion. These lamps (and any others on the same principle) are therefore the best yet devised. *The German Student Lamp* we have used for many years. Light from it costs less than a fourth the price of gas, and is so much better for the eyes and for health and comfort that we would not accept gas light for reading, sewing, etc., as a gift.

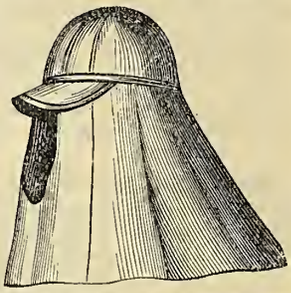


These lamps are now made in very perfect improved form, and we can furnish them with chimney, shade (white glass), etc., all complete for $5 (about half the old price) in polished brass, and for $6.00 in fine nickel plate; OR, one in polished brass will be **Presented** for **7** subscriptions, and one in nickel plate for **8** subscriptions to the *American Agriculturist* at $1.50 each.—If to be sent by freight or express, 25 cents extra for boxing. The carriage to be paid by recipient.

Five Good Health Preservers.

It pays in money, as well as in comfort, to keep in good health and vigor, and next in importance to providing good, well masticated, well digested, nourishing food, if not more important, is the protection of the outside of the body. Chilliness, indneing colds and congestions, is a prolific source of a multitude of diseases, and even dampness is a great cause of chilliness. India Rubber has done a great work in protecting the body, especially the feet, by waterproof covering.

No. 6.—Rubber Cap, with Cape.—Price $1.50.—Capital covering in a storm, the Cape coming down far enough to perfectly protect the neck and top of shoulders. In front is a roof over the eyes and face, with opening for seeing and breathing freely. We can send a good one anywhere in U. S. by mail, post-paid, for $1; OR we will **Present** one, post-paid, for **2** subscriptions at $1.50 each. Send size in inches, hat-dealers' measure, or where the hat rests.



No. 7.—Rubber Sack Coat.—Price $6.00.—An excellent protector, strong, durable, rain-proof, and yet so light that it weighs only 16 to 20 ounces, according to size. They are made in various lengths and sizes, and in ordering give your full hight, weight, and size around the waist just below the arms. We send one, packed in a rubber pouch for carrying and keeping it in, post-paid, to any P. O. in United States or Territories, on receipt of the price ($6.00); OR we will **Present** one for 8 subscriptions at $1.50 each, sending it post-paid. Double interest at 6 per cent, makes the cost of this admirable coat per year only 72 cents, or 1 cent for each 5 days. It often more than repays this amount during a single storm.

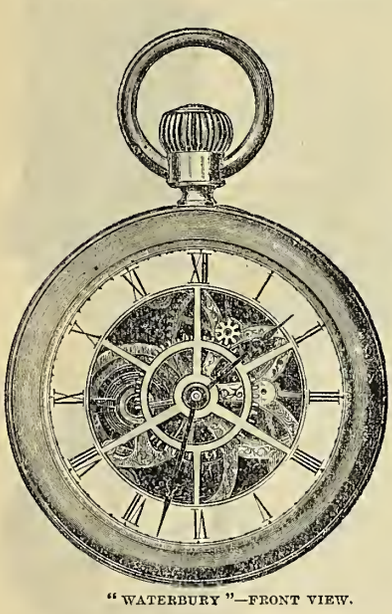
No. 8.—Rubber Leggins.—Price $2.00.—Very useful in rainy weather, and in dew-laden grass. Wet pantaloons are not easily changed, if one is not at home, and the cold from evaporation is a prolific cause of ill health. These are now made very light (5 or 6 ounces), yet fully waterproof, and durable. State size desired—"small," "medium," or "large." We will mail a set, post-paid, anywhere in the United States for $2; OR we will **Present** a pair, and send them, post-paid, for **3** subscriptions at $1.50 each.

No. 9.—Combined Rubber Outfit.—Price $9.00.—The above Cap, Coat, and Leggins, furnish a storm-proof covering, if the feet be well shod or "rubbered,"—the whole weighing only 2½ lbs. for medium sizes, and costing $9. The double interest on this is only about 2 cents a week. They will often save their *full* cost in doctor's bills during a year, and quite likely much more in saving one's health, and the loss of time from colds or "feeling badly." We mail the whole anywhere in United States or Territories, post-paid, for $9; OR we will **Present** the whole, post-paid, for **11** subscriptions at $1.50 each.

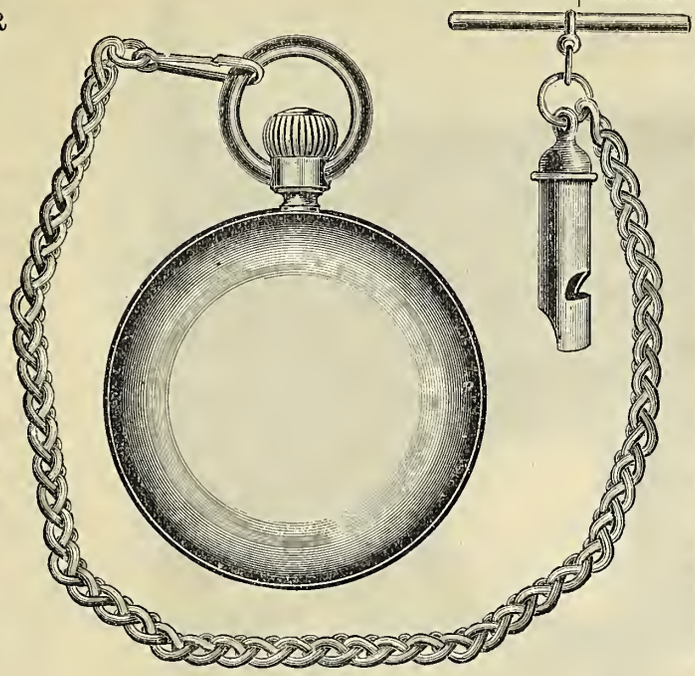
No. 10.—Ladies' Circular Waterproof.—Price $4.50.—A most desirable article for every Lady likely to be exposed to a storm.—First-rate quality.—(There are plenty of similar articles offered at all sorts of prices, from $3 up, but the lower-priced ones are "seconds," "thirds," or more likely "fifths," with defects not perceptible to the inexperienced. This one, made by the GOODYEAR RUBBER CO., is of the best quality, and "feather weight,"—so light that it can be rolled and carried in one's pocket or reticule. It is packed in a small rubber pouch. We will select and mail one, post-paid, to any part of the United States for the price, $4.50; OR **Present** one, post-paid, for **6** subscriptions at $1.50 each.—Send measure from neck to bottom of walking dress, or name length desired from neck down. They vary from 50 to 60 inches in length.

EVERYBODY'S WATCH AND CHAIN,

POST-PAID, FOR $3.50; OR 4 NEW SUBSCRIBERS.



"WATERBURY"—FRONT VIEW.



"WATERBURY"—BACK VIEW.

The Waterbury Watch.—Price $3.50.

1 1.—The Waterbury Watch, as now made and put upon the market, is a marvel of simplicity and accuracy, and contains more ingenuity than any one thing that has been patented in this or any other country for a number of years. Within the last twelve months, many valuable improvements have been made, both in the manner of putting up, as well as in the quality of material used.

How Tested and Regulated.

No watch is sent from the factory which has not been run six days in varying positions, and carefully regulated. The test during the six days is a very severe one; all must come up to the standard, or be sent back to the workroom. Hitherto a low-priced watch has been the very poorest of investments, being of no value as a time-keeper, and a constant annoyance and source of expense to the owner. The Waterbury Watch is composed of less than one-third the usual number of parts in a watch, which are so arranged as to be easily cleaned and repaired. It runs 27 hours with one winding, and will wear for years.

Mechanism of the Watch.

On winding up the Waterbury, the plate turns around, thus coiling up the spring. There is no possible danger of ever winding or breaking the spring in that way, for when the spring is wound up, a strong stop motion or ratchet catches in the case itself and holds everything firm. You may twist off the stem, but you cannot break the spring. Moreover, the spring is very thin and therefore less liable to break under rough usage. The interior machinery of the watch consists of three wheels and a hair spring and balance wheel. This is the whole story—A spring, a revolving wheel work, balance wheel work, and a train of three wheels. Taking every part, screws, pinions, wheels, case, spring and fittings, there are only fifty-eight parts in all, as against usually 150 to 200 pieces. There is another point in connection with the Waterbury. If all the wheels revolved around the centre of the case every hour, it is evident that the bearing of all the wheels, those parts that wear the most, will be continually shifting their position. The pressure or weight upon the bearings will be continually changed—if there is any wear it will be distributed equally. The wear is distributed on all the working parts alike, a mechanical description of which will be found in a book accompanying each watch.

A watch made by hand would cost as much as a cottage by the sea shore or a small yacht, and would take about as long to build. So perfect is the machinery used in the manufacture of this watch, and so exact are all the parts, that they go together at once the first time and revolve, without fitting, or with so little that it does not materially add to the cost. This is the secret of the cheapness of the Waterbury Watch.

So well known have these watches become, thousands are buying them in preference to higher-priced watches—over 100,000 have been made and sold the past 12 months. The Company are now making six hundred watches every day, or one a minute. You would imagine the whole country supplied by this time. By no means. This is the farmer's watch, the miner's watch, the laborer's watch, the boy's watch, the school-girl's watch—in fact, Everybody's Watch.

High Testimonials.

POUGHKEEPSIE, N. Y., May 1, 1882.

Waterbury Watch Co.:

Allow me to take this opportunity of expressing my admiration for the excellence of this simple and inexpensive watch. It keeps better time than a silver watch in our house which cost, at a reliable dealers', seven times as much. Each of my boys carries one of these watches, and with great satisfaction.

Yours very truly, WILLIAM B. DWIGHT,
Professor of Natural History, Vassar College.

OFFICE OF THE STAMFORD "HERALD,"
STAMFORD, CONN., Aug. 11, 1882.

GENTLEMEN—We have in our house two Waterbury Watches. I have timed them for two weeks with a fine Waltham, and they are about equal to it. They are certainly a marvel. Respectfully, GEO. BAKER,
Editor Stamford *Herald*.

BROOKLYN, N. Y., Oct. 10, 1881.

Waterbury Watch Company:

GENTLEMEN—One of your watches was presented to me at the beginning of the past season by one of the officers of this road. I was responsible for the time used on the road. I started all trains by your watch. Mr. Gunther, our President, stated that he never had the trains run as regularly as they were the past season. I showed him the watch I run them by, which was a Waterbury watch that did it. I stopped every morning during the season, and compared the watch with chronometer at the Long Island Depot, and found my watch did not vary half a minute the entire season.

This statement is truthfully correct.

(Signed) WM. S. BLYDENBURGH,
Depot Master Brooklyn, Bath & Coney Island R. R.

PORT JEFFERSON, L. I., July 8, 1881.

To the Waterbury Watch Co.:

GENTS—Of the watches bought of you 20th June, anxious to know what they would do in the way of time-keepers, I hung up two alongside my chronometer, on board my vessel, Schr. "James Slater," on voyage from New York to Para, South America, and found after running two days they did not vary ¼ of a minute. I recommend them with pleasure. JAMES L. TOOKER,
Master Schr. "James Slater."

We will send one of these Watches and a Nickel-Plated Chain, with Charm attached, *free* and post-paid to any one who will send us **4** subscriptions at $1.50 each; OR we will supply it for the price, post-paid.

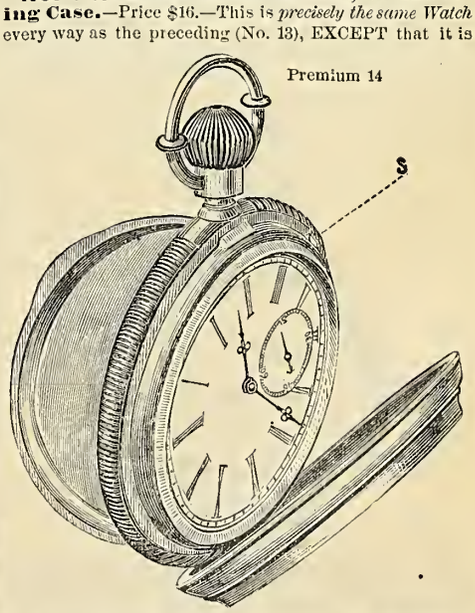
No. 12, is a **Good Watch,** a *Stem-Winder*, and *Stem-Setter* (needing no key, or opening, to set it).—The admission of dust, in opening, is the chief cause of depreciation in any good watch. This watch has a clear open dial, covered with a *strong*, thick, flat *crystal*, having the new bevelled edges. Weight, 4¾ ounces. Size, that of the engraving. The case is strong, good-looking, heavily plated with Nickel on German Silver, and only distinguished from silver by good judges, and Nickel does not tarnish by sweat or gasses like silver.—The extra cost of a silver case is, in *this* watch, put into the running works, the important part. *One of the best time-keepers, for its price, that we have yet found.*—It is made especially for us, and with extra care. We supply this for $10, send it prepaid by express or mail to any P. O. in United States or Territories; OR, we will **Present** it, carriage prepaid, for **13** subscriptions at $1.50 each.

No. 13.—Extra Silver-Case Watch.—Price $15.—This excellent watch is specially made for us by a most reliable Company in Switzerland. It has a Coin Silver Case, and the WORKS are of Extra HIGH GRADE, with **13 Jewels,** Compensated Balance, etc. It has been proved by several in our own office, and by many of our readers, to be *just as good a Watch* as any $30 or $40 Watch we have ever tried or seen. It is a good enough Silver Watch for anybody. We **Present** this valuable and desirable Watch for **20** subscriptions at $1.50 each, and send it carriage-paid to any part of the United States or Territories, OR for the price, $15.

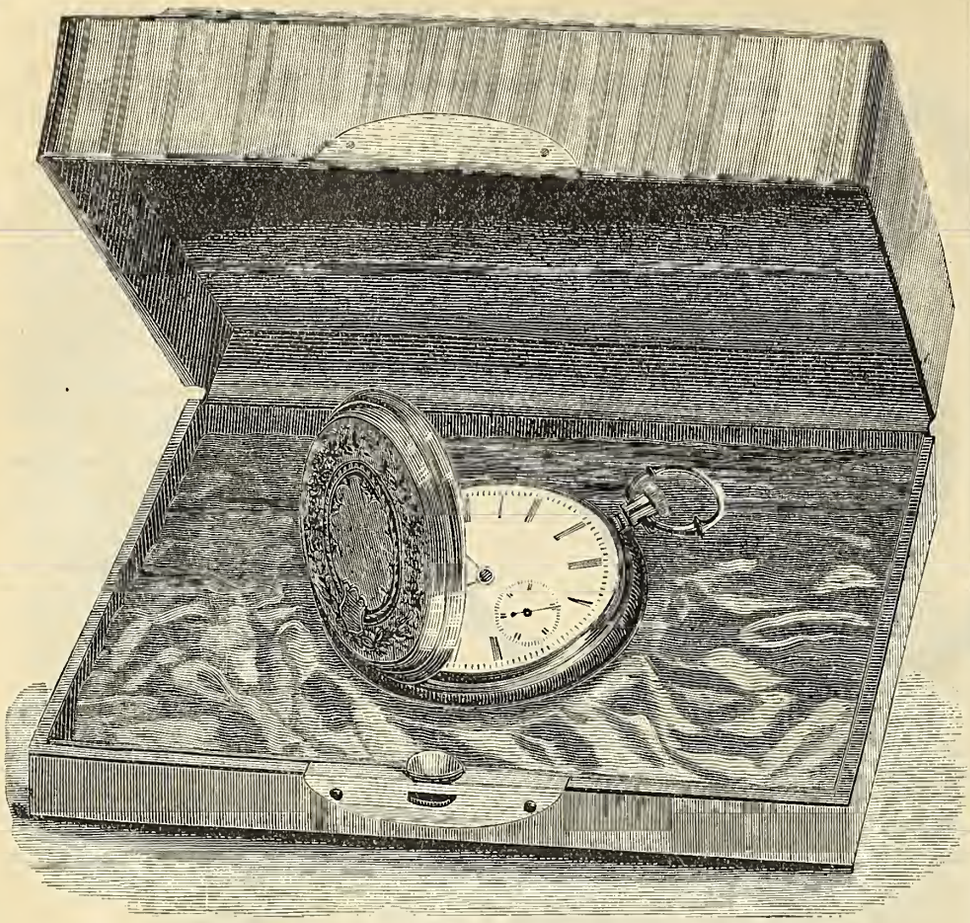
Premium 13.

No. 14.—Extra Silver Watch, in Hunting Case.—Price $16.—This is *precisely the same Watch* every way as the preceding (No. 13), EXCEPT that it is

Premium 14



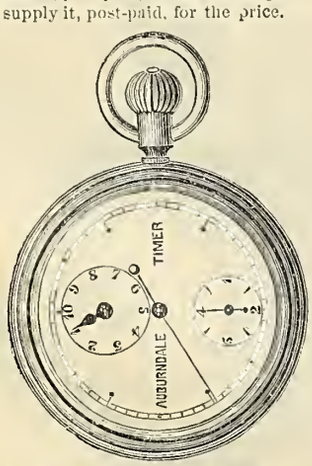
in a strong "Hunting Case," as shown in the engraving. This we **Present,** carriage prepaid, for **22** subscribers at $1.50 each; OR, supply it as above, for $16.



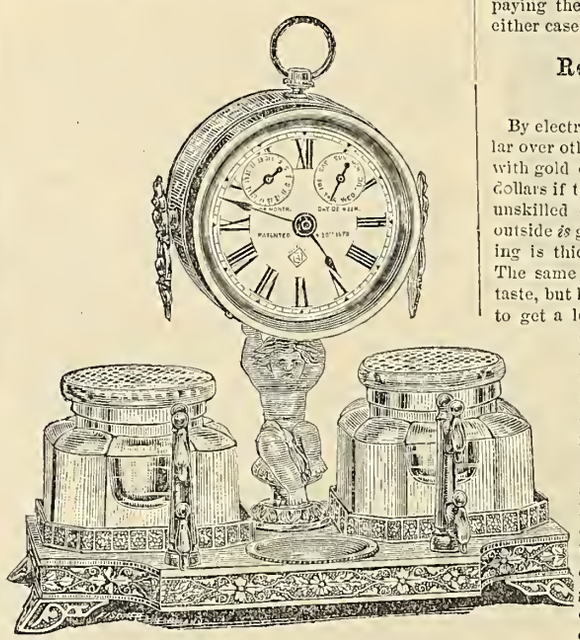
No. 15.—LADY'S FINE GOLD WATCH—NEW PATTERN, AND ELEGANT SATIN-LINED CASE.

No. 15.—Lady's Gold Watch—Stem Winder.—Price $20.00.—This very elegant Stem Winding Swiss Watch, is made by one of the leading manufacturers, and we have made arrangements with the Importers, by which we can offer them for Premiums, at the above surprisingly low figures. The Movement is excellent, and finely finished. It has a plain Hunting Case, and while not so showy as some watches, it is a really superior article, and has no appearance of cheapness, but presents a remarkably neat and rich exterior. We will **Present** one of these Watches **Free**, and post-paid, to any one who will send us **26** subscriptions at $1.50 each; OR will send it, post-paid, on receipt of price.

No. 16.—Lady's Gold Watch—Enameled.—Price $19.00.—This Watch is from the same Manufacturers as the Stem Winder, and the Movement is similar in every respect, with the exception that this one winds with a key. The Case is richly ornamented in Black Enamel on both sides, and tastefully engraved. The Dial has a Second Hand; the appearance of this Watch is very elegant, and it is rare that such a "Beauty" can be found at so moderate a price. We will give one of these Watches, post-paid, for **25** subscriptions at $1.50 each; OR supply it, post-paid, for the price.

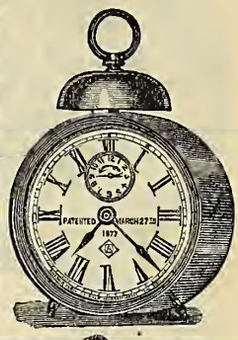


No. 17—The Auburndale Chronograph Timer.—The only reliable Timer endorsed by Scientifical, Mechanical, and Sporting authority. It is entirely new, and it supplies a want that has long existed for marking small divisions of time with perfect accuracy. Wherever it is desirable to prove the precise passage of time to ⅛ of a second, it will perform the required duty. The prices of the Auburndale Timer are such as to meet the moderate means of all. Timer, ⅛, plain, $15.00, given, post-paid, for **15** subscribers, at $1.50 each; Timer, ¼, plain, $15.00, given, post-paid, for **15** subscribers, at $1.50 each; Timer, ⅛ split, $25.00, given, post-paid, for **25** subscribers, at $1.50 each; OR supplied for the price.

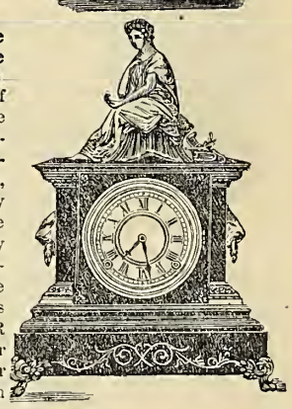


No. 18.—Office-Clock and Inkstands.—Price $7.50.—This admirable combination of the serviceable and ornamental will make a very pleasing as well as useful souvenir. It includes a very handsome Clock, silver-plated, upheld by a gold-plated figure, on either side of which is a cut-glass Inkwell, Pen-holder, etc. On the dial are Indicators of the Day of the Week and of the Month.—It is a Stem-winder, and a good time-keeper; is 7½ in. in hight, and 8 in. in width. **9** subscriptions at $1.50 each will secure this elegant prize; OR we will send one on receipt of $7.50, express to be paid by the receiver.

No. 19.—The "Florentine" Clock.—Price $22.00.—This Clock has a Plush-Covered Case (will be furnished in Red, Blue, or Old-Gold). Nickel and Gilt Ornaments. Has Black Dial; Rings the Hour and Half Hour by a Musical Gong; handsome Gilt Base and surmounted with a Bronze Figure of a Wounded Dog. Whoever secures **22** subscribers at $1.50 each will be amply rewarded by the presentation of this very handsome clock; OR we will supply it for the price. Receiver to pay expressage.



No. 20.—Peep-O'Day.—Price $2.70.—This little Clock should be found in every household. It is Nickel-plated, has an Alarm Attachment, and on the dial is an Indicator of the Day of the Month. The clock is wound and set at the back, and runs 24 hours. For **3** subscribers at $1.50 each, we will send this little clock, post-paid, as Premium; OR we will supply it for the price.



No. 21.—The La Duchesse Clock.—Price $16.—The case is made of Marbleized Iron; the face of French Porcelain, handsome Bronzed and Gilt Ornaments, and surmounted by Bronze Figure. The Clock is an eight-day striker. **19** subscriptions at $1.50 each are required to get this handsome clock; OR we will supply it for the price. Receiver paying the freight in either case.

Real Gold and Silver Things.

Some Useful Information.

By electro-plating it is easy to spread a single gold dollar over other common metals, so as to completely cover with gold enough articles to be worth several thousand dollars if they were solid gold, and so perfectly that an unskilled observer can see no difference, because the outside *is* gold. Nor can he tell whether the gold coating is thick enough to wear a week or a year or more. The same is true of Silver. So most persons of good taste, but limited means, prefer, for ornamental articles, to get a less number in solid gold or silver.—Articles composed largely of gold or silver are always valuable for sale, if circumstances require their disposal, or if they become antiquated or worn out, or are crushed by accident, because dealers will always pay nearly coin rates for all the gold or silver they contain.

"Coins—Carats," etc.—But *pure* Gold and Silver are very *soft* metals, and will endure little wear. Therefore circulating Coins, for example, are alloyed with harder metals. United States Gold Coins contain 9 grains of copper and 1 grain of silver to 90 grains of gold; and the Silver Coins consist of one part of copper to nine parts of silver. English coins are one part of copper to eleven of silver, and this alloy is called "Sterling" Silver—a little higher grade than United States coins, and a trifle less durable.—Jewellers reckon the pureness of gold by "CARATS," the absolutely pure being 24-carats. If having 6 parts of silver or other alloy, it is 18 carats fine, and this grade is used for the best articles having much delicate wrought work, not subject to wear. The usual quality is 14-carats for most gold articles subject to wear. This quality retains the gold color, and is not affected by single acids or by gases. (United States Gold Coins are $21\frac{19}{32}$-carat; the English, 22-carat.)—The best silver articles are either "Coin Silver" or Sterling.

These Watches and Clocks are very ornamental, as well as good Time Keepers.

To meet the wants of Our Readers, especially those remote from *thoroughly trustworthy dealers,* we have arranged to supply a few articles fully guaranteed to be as represented, which may be desired for use, or for Presents, Wedding Gifts, etc.—The prices stated are low for articles of the kind, quality, and workmanship, and the patterns are recent and popular.

22.—Solid Silver Napkin Ring (of *Sterling* Silver, finer than U. S. coin); heavily and richly engraved. Size and pattern shown in engraving. A beautiful Present. We will supply this, post-paid, to any part of the U. S. for $3. OR we will supply it for **4** subscriptions at $1.50 each.

23.—Collar Button. — Price $2.50.—Solid 14-carat gold, and will be furnished in polished or Roman gold. Presented for **4** subscriptions, at $1.50 each, or sent for $2.50. Sent post-paid.

24.—Excellent Compasses, very useful and ornamental, worn on the Watch Chain. In fine 14-carat gold case, with ornaments, and of the size shown in engraving. The compass, accurate and reliable, is set between strong crystals, and is seen from either side. *A very desirable article for one's own use, or as a choice Present to a friend.* We supply this (post-paid to any part of the United States or Territories), for $5.75; OR we will **Present** it for **7** subscriptions at $1.50 each.

25.—Gold Rings (for Misses).—Engraved Shank; 14-carat solid gold; of sizes to suit. Send exact measurement desired. We supply these for $3.50 each, and deliver them *free* in any part of the United States or Territories; OR we will **Present** one, post-paid, for **5** subscriptions at $1.50 each.

26.—Gold Ring (for Misses), with engraved Shank and Turquoise Stones; 14-carat, solid. Send size desired. We supply this, post-paid, as above, for $3; OR we **Present** it, post-paid, for **4** subscriptions at $1.50 each.

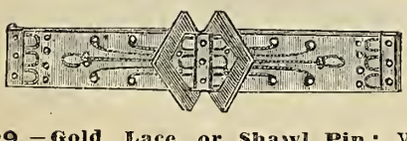
No. 25. No. 26.

27.—Seal Ring, 14-carat gold, with richly engraved Shank; with Blood Stone (Onyx) of *any color* desired. Send exact measure of finger. We supply this, post-paid, as above, for $8.50; OR we **Present** one, sending it, post-paid, for **11** subscriptions at $1.50 each.

No. 27.—Seal Ring.

No. 28.—Band Ring.

28.—Band Ring; Richly engraved, as partially shown in cut; 14-carat gold, solid. Send size desired. We supply this, post-paid, as above, for $4; OR **Present** it, p. p., for **6** subscriptions at $1.50 each.

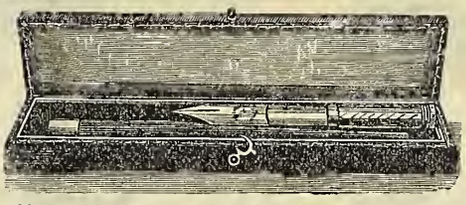


29.—Gold Lace or Shawl Pin; Very tasteful, richly ornamented with bright *raised work* on Roman gold surface. 14-carat gold, solid. We supply this, post-paid, as above, for $7.25. OR **Present** it, sending it, post-paid, for **9** subscriptions at $1.50 each.

30.—Gold Sash Pin; Same kind, quality, and workmanship as No. 29. We supply this for $3.00, and send it, post-paid, anywhere, as above; OR we **Present** it, post-paid, for **4** subscriptions at $1.50 each.

No. 31.—Sash Pin.—Price $3.00.—Same quality and workmanship as No. 29. Solid 14-carat gold. **Presented** for **4** subscriptions at $1.50 each; OR we will supply one for the price. Sent post-paid.

No. 32.—Desk Pen and Holder.—Price $2.25. A case containing a ten-carat gold pen, and heavily



gold-plated holder, with ebony handle. A very neat, serviceable, and desirable article, from the best maker. Sent, post-paid, for **4** subscriptions at $1.50 each; OR we will supply it, post-paid, for the price.

No. 33.—Gold Pen and Pencil Combined.—Price $3.00. A most beautiful and practical Premium. The case is heavily gold-plated, and contains a

No. 4 Diamond pointed Gold Pen, warranted. **5** subscribers at $1.50 each, will secure, post-paid, this very useful and ornamental Premium. In sending for this pen, state whether it is desired to be stiff, medium, or limber. [We will forward one, post-paid, for the price].

No. 34.—Patent Magic Bell Head Pencil.—Price $1.50. A convenient, ornamental, and

Open. Closed.

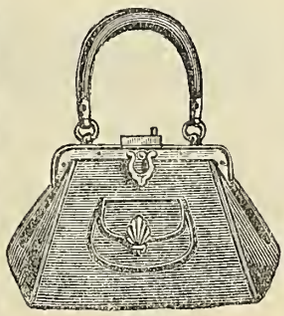
popular Premium. The pencil is extended or closed by pulling or pressing the head. Sent post-paid for **2** subscriptions at $1.50 each; OR sent on receipt of its price.

No. 35.—Gold Pen. Telescopic Case.—Price $2.50. This is a very handsome Gold Plated Case, with a No. 4 Diamond Pointed PEN, and warranted. **4** subscribers at $1.50 each, will secure this servicable article, post-paid. In sending for this pen, state whether you desire it to be stiff, medium, or limber. We will supply one, post-paid, on receipt of $2.50.

USEFUL AND ORNAMENTAL ARTICLES.

Newest Styles.

No. 36.—Lady's Hand Bag.—Price $1.00.—Made of extra fine Alligator-skin. Latest pattern, with nickel plated trimmings. A new and stylish article; Very popular with N. Y. Ladies. Any present subscriber sending us **2** subscribers at $1.50 each, will secure this, post-paid: OR we will send it, post-paid, for the price.

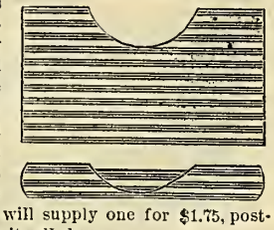


No. 36.

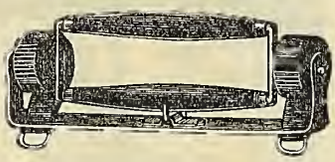
No. 37.—Lady's Hand Bag.—Latest and fashionable pattern. Price $2.75. Extra large size. Made of genuine Alligator-skin, with extra pocket on the outside; nickel plated trimmings. One of the finest Premiums on our list. **Presented,** post-paid, for **3** subscribers at $1.50 each; OR we will supply it, post-paid, for the price.

No. 38.—Ladies' Pocket Book.—Price $1.50. Plush. (Cardinal, Black, or Old Gold,) fancy clasp, fancy leather front, leather-lined, 2 inside Pockets. Given for **2** subscribers at $1.50 each; OR will be supplied for the price, post-paid, in either case.

No. 39.—Lady's Folding Lap Board.—Price $1.75.—It is made of Black Walnut and Pine, securely fastened to cloth, and thus is flexible; can be folded up. Nicely finished, and has a yard measure stamped upon it. **3** subscriptions at $1.50 each will secure this, post-paid; OR we will supply one for $1.75, post-paid. Lower cut shows it rolled up.



No. 40.—Shawl Strap.—Price 70 cents. Very useful, the latest improved style. Black Walnut Handles, and Nickel Plated Trimmings. Any present



subscriber, sending us **1** new subscriber, and $1.50, will secure this, post-paid; OR we will send it, post-paid, for the price.

No. 41.—Gent's Morocco Bill Book—New Model.—Price $1.25. Size, 8 by 3½ in., with flap, 5 pockets, and separate compartment for silver, with clasp. A very useful article. Given for **2** subscribers at $1.50 each; OR supplied for the price, post-paid.

No. 42.

No. 42.—Ladies' Side Satchel.—Price $2.00. Seal leather, nickel clasp, leather-lined. Inside pocket, handle, and leather hook to attach to belt. Given for **3** subscribers at $1.50 each; OR supplied for the price, post-paid.

No. 43.—Ladies' Work-Box.—Price $1.50. —Ebonized, highly decorated Cover, Mirror in top, paper and velvet lined. Contains Scissors, Needle Case, Bodkin, and Thimble, with Lock and Key. Given for **2** subscribers at $1.50 each; OR will be supplied for the price. Receiver to pay expressage in either case. New design. Makes a beautiful gift.

No. 44.—Ladies' Work-Box.—Price $8.00. —A very handsome and useful present for Wife, Mother, or Sister. Genuine Rosewood and Ebony, finely inlaid Cover, lined with quilted satin and velvet. Three compartments, furnished with Mirror, Scissors, Bodkin, Thimble, Stiletto, and Needle Case, with Lock and Key. Given for **8** subscribers at $1.50 each; OR will be furnished for the price. Receiver to pay expressage in either case. A new and beautiful pattern.

No. 45.—Black Walnut Writing Desk. —Price $2.25.—Gold and Black Enamel decoration, both in and outside. Lock and Key. Velvet lined. Five compartments. Given for **3** subscriptions at $1.50 each; OR sent for price. Receiver to pay expressage in either case. New model and handsome present.

Closed. Open: 1¼ feet.

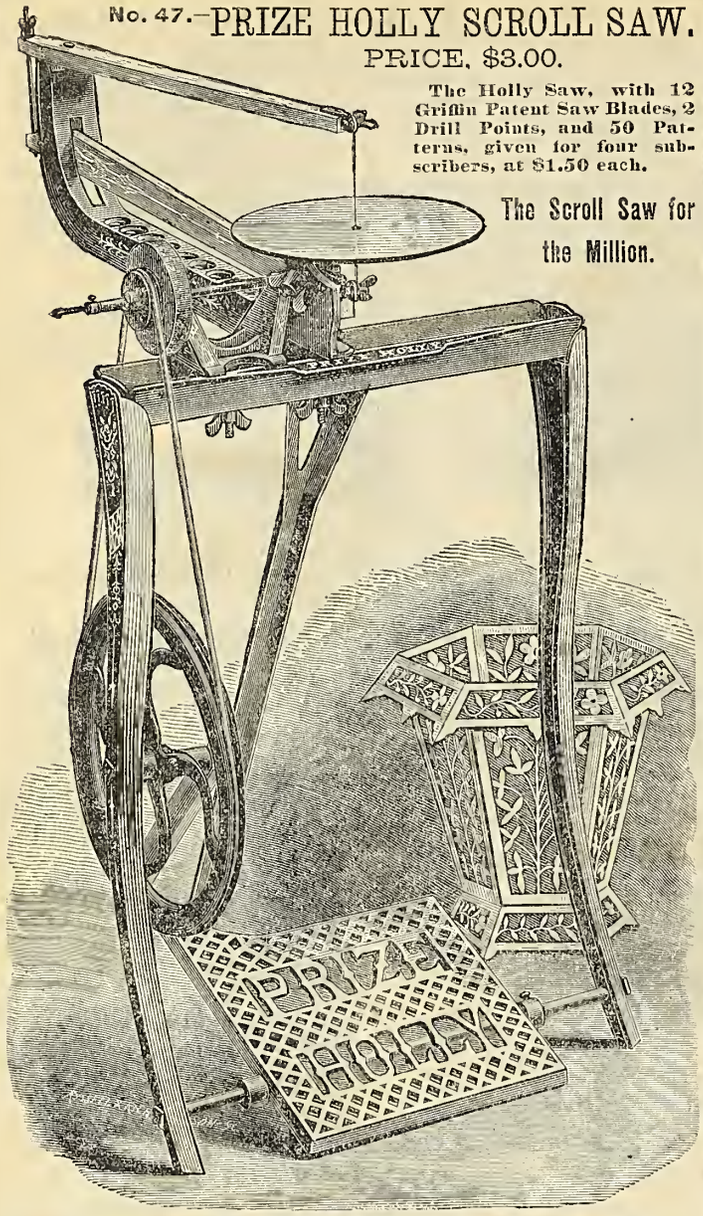
No. 46.—Spy Glass or Pocket Telescope.—Price $3.75.—(12 lines.)—Made of fine brass tubing, corded, with sun or storm shade; readily carried in the pocket when closed. Best one of the kind made for the money. Supplied, post-paid, for **5** subscriptions, at $1.50 each; OR sent, post-paid, for the price.

No. 47.—PRIZE HOLLY SCROLL SAW.

PRICE, $3.00.

The Holly Saw, with 12 Griffin Patent Saw Blades, 2 Drill Points, and 50 Patterns, given for four subscribers, at $1.50 each.

The Scroll Saw for the Million.



Unsurpassed by any machine of its kind in beauty of finish, capacity for working, and ease and simplicity of operation.

Dimensions and Capacity.

Hight of machine, 30 inches; width, 18 inches; diameter of Balance Wheel, 12 inches; weight, 7 pounds. Saw swings 20 inches in the clear; stroke, 1½ inch. Lathe-bed Ways ground and polished.

The favor with which this Saw has been received and proved in use by tens of thousands of boys and girls and men and women, warrants us in commending it in the highest terms.

Some Points of Value:

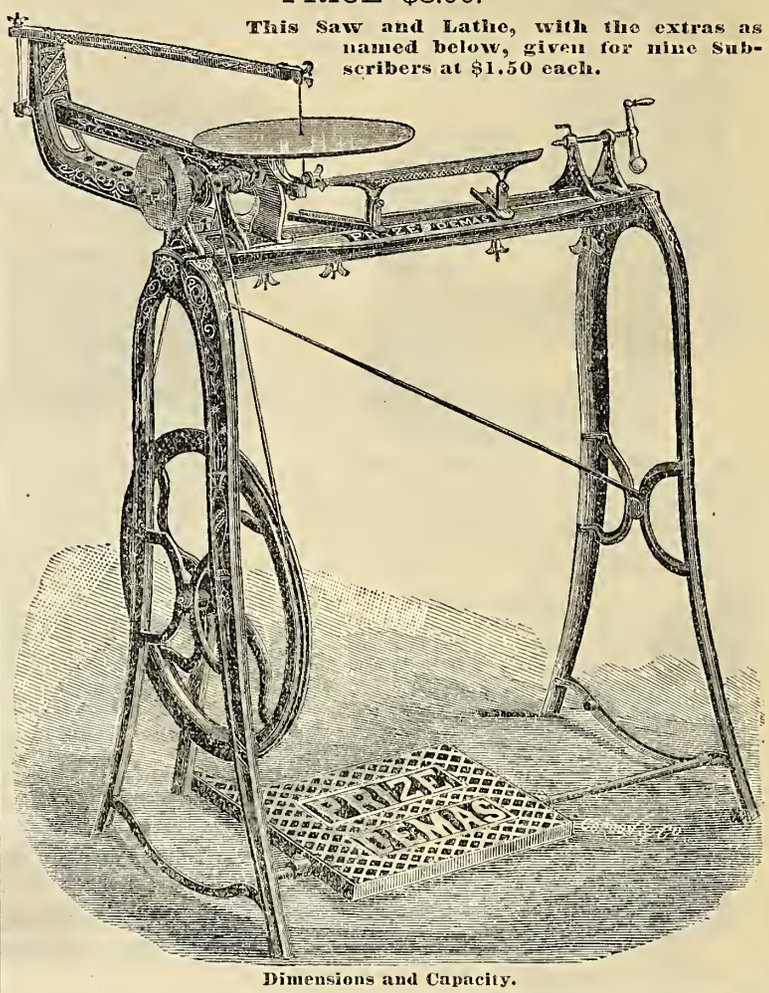
Saw Clamp, for firmly holding saw-blades for delicate work;
An Emery Wheel, a Tilting Table, Simplicity of setting up,
Rapidity of running, etc.

Ladies and children have operated it most successfully, and the most exquisite work, in wood or shell, can readily be turned out from it by a practised hand. It will work in material from the thickness of tortoise shell up to boards 1¼-inch thick. Whole weight 30 lbs. No more useful or pleasing present could be given by a father or other friend, to an ingenious boy. The capacity for Bracket or Scroll Sawing is well nigh unlimited with this machine. We will give, with this machine, 2 Drill Points, 12 Saw Blades, 50 Patterns. **4** subscriptions at $1.50 each will secure this Saw; OR we will supply it for the price. Receiver in either case to pay freight or expressage.

No. 48.—Prize Demas Lathe and Scroll Saw.

PRICE $8.00.

This Saw and Lathe, with the extras as named below, given for nine Subscribers at $1.50 each.



Dimensions and Capacity.

Hight from floor to top of Lathe Bed, 27½ inches; to Centres, 30 inches; to top of Saw Table, 32 inches.

Length of Lathe Bed, 24½ inches; it will turn a piece 16 inches long and 5 inches in diameter.

Diameter of Balance Wheel, 14 inches; weight, 11 pounds.

Stroke of Crank, 4 inches: size of Lathe Spindle, $^{7}/_{16}$.

Short Rest, 4 inches long; Long Rest, 12 inches long.

Stroke of Scroll Saw, 1¾ inches; it will cut 1½ inch thick if necessary, but 1 inch practically, and swing 20 inches in the clear.

It has Tilting Table, which is ground and polished; the ways to Lathe Bed are also ground and polished—in fact, it is so finished that it will do just as fine work and just as satisfactory as any $50.00 Lathe and Saw.

Chucks for holding Drills, etc., can be attached. Weight, 50 pounds.

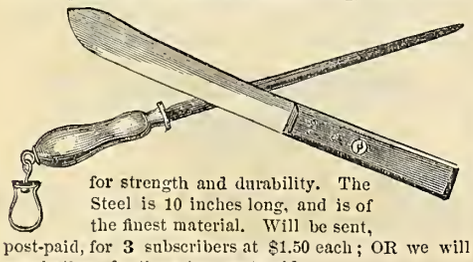
We know of no combined Turning Lathe and Bracket Saw equal to this in value for amateurs' use. All that is said in favor of the Holly Saw may be said of this, with the very important additional facts that its extra weight gives it greater power for work, while it also can be used for the most delicate scroll sawing, and that the Lathe, which may be run, if desired, at the same time with the saw, very greatly enlarges the field of operations.

In the way of useful and ornamental work, brackets, book-stands, all kinds of scroll work, and anything which requires such a Saw or Lathe for its manufacture, the list of articles to be produced is limited only by the ingenuity of the operator. Many a home has been made attractive by the fine ornamental work that has been done by the sons, and daughters too, with these machines. It is very compactly built, having a polished Tilting Table, an Emery Wheel and Drill, and Turning Tools. We will give, with each machine, 6 Turning Tools, 12 Saw Blades, 3 Drill Points, and 30 Patterns. **9** subscriptions at $1.50 each will secure this machine; OR we will supply it for the price.

Buzz Saw Attachment.—For 2 additional subscribers, that is, for **11** at $1.50 each, we will add a Buzz Saw Attachment and one 3½-inch Buzz Saw, which can be attached to the Demas Lathe and Saw; OR we will supply this attachment for $1.50 additional to price, that is, for $9.50. Receiver in either case to pay freight or expressage.

No. 49.—Butcher's Knife and Steel.

—Price $1.50.—The Knife is 8 inches long, and is made



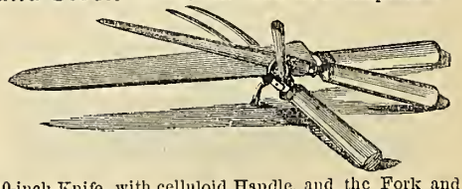
for strength and durability. The Steel is 10 inches long, and is of the finest material. Will be sent, post-paid, for **3** subscribers at $1.50 each; OR we will supply them for the price, post-paid.

SUPERIOR CUTLERY.

No. 50.—Table Knives and Forks.—Price $10.00.—One dozen each Knives and Forks, medium size, made of the very best steel, with hard rubber handles. The Knives and Forks will be a very acceptable Holiday Present, and can be easily secured by any one. Will be **Presented,** post-paid, to any one who will send us **12** subscribers at $1.50 each; OR we will supply them for the price, post-paid.

No. 51.—Bread Knife.—Price $1.00.—This very useful Knife is well made of the best steel, with the word "Bread" engraved on the blade; is strong and durable. Will be given, post-paid, for **2** subscribers at $1.50 each; OR supplied for the price, post paid.

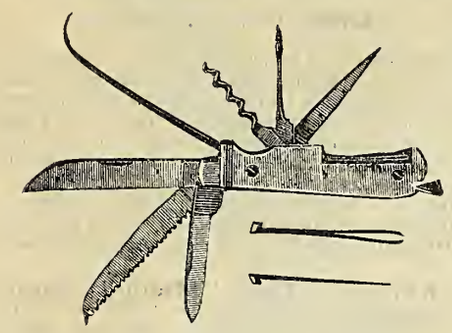
No. 52.—French Cook's Knife, Fork, and Steel.—Price $4.50.—This set is composed of a



10-inch Knife, with celluloid Handle, and the Fork and Steel are made to match the Knife. The handles will not crack when placed in hot water. Given for **6** subscribers at $1.50 each; OR will be supplied for the price. Receiver to pay expressage, which is small.

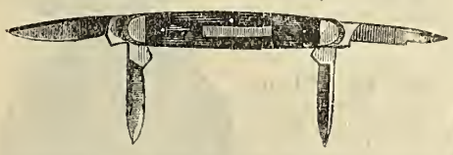
A $4----$100 Pocket Knife.

53.—For Man or Boy, the most useful, convenient, and indispensable of all pocket articles—except a well filled money wallet—is a KNIFE. A one-bladed "jack-knife" is infinitely superior to none; a large and small bladed one is much better; but perfection is attained in the knife here illustrated—and as it combines so much in so little weight (2 ounces), we named it the "**Multum-in-Parvo Pocket Knife.**" The one shown we have carried 15 years, and though the cutting blades are worn to almost nothing, making a two-bladed fellow necessary, the other parts are still in daily use. Its good *Screw-driver* (hidden by the open blade) is always at hand for moving inch screws and under, and larger ones if in soft wood. The *Saw*, with double rowed teeth, cuts off sticks and all sorts of things up to inch boards. The strong *Hook* hooks up a great many things, from a stove-cover to a bucket of hot water, etc., etc.; it pries open a door and other fast things; cleans out a horse's hoof; pulls on shoes, boots, etc.; is like the end of an elephant's trunk in several respects.—The *Punch* makes holes in wood, in harness, etc., and by turning its sharp corners it rims out or enlarges the hole made.—The *Gimlet* often comes in play.—The *Cork-screw* is indispensable in these days abounding in bottled "patent medicines,"—that is, to most people! The *Tweezers* and long *Pointer* (both nearly 2 inches long), concealed in the handle except the partly drawn out ends, are often useful, the tweezers for extracting slivers, stray hairs on the face, for picking up small objects, etc.—the *Pointer* for a long, pointed brad-awl, etc.—The back of the *Hook* makes a useful *Hammer* for tacks and other minor poundings.—The inside of the *Hook* has a small *Nut-cracker*.—All the above, with *two* excellent *blades*, fold neatly and smoothly into a conveniently carried, 3-inch long, ivory handle 2-ounce Knife—a POCKET FULL OF TOOLS, always at hand for instant use. Very often its use in a single emergency, when at work or travelling, is worth a great many times its original cost. The writer would not be without it for several times that cost.—We can mail one anywhere in the U. S. for $1. OR, we will **present** one for **5** subscriptions at $1.50 each. Very many of our present readers have already obtained one; all others may do so, without cost, for any one can find five persons who would be benefited by the *Amer. Agriculturist*, and should be persuaded to obtain it.



KNIFE CLOSED

Nos. 54 to 58.—Pocket Knives.—Price $1.00 to $2.00.—No. 54.—Made of the best steel, with neat and substantial Handle, and of ordinary pocket size. No. 55 is a fine $1.00 Knife, containing 4 Blades, with Stag Handle. Either, post-paid, for **2** subscribers at $1.50 each. No. 56.—Price $1.00, is a large sized Knife, for Farmers or Boys, and contains 2 Blades, one large and one small one, with Stag Handle. Given for **2**



subscribers at $1.50 each, post-paid. No. 57.—Price $2.00, is an elegant Pearl Handled Knife, with 4 Blades. A very desirable article. Given, post-paid, for **3** subscribers at $1.50 each. No. 58.—Price $2.00. Ladies' Pearl Handled Knife, of size suitable for a lady. Contains 4 Blades of best steel, and makes a very useful present. Will be sent, post-paid, for **3** subscriptions at $1.50 each. Any of the above Knives will be supplied, post-paid, for the price.

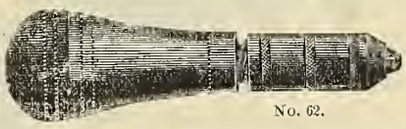
No. 59.—Pair of Shears.—Price $1.00.—This premium will please the ladies. The Shears are 8 inches in length. They are a superior article. Given for **2** subscribers at $1.50 each, post-paid; OR will be supplied for the price.

No. 60.—Button-Hole Scissors.—Price 75 cents.—Have a screw gauge, and are of the best material. We will **Present** them to any present subscriber sending us **1** new subscriber at $1.50; OR we will supply them for the price. Sent post-paid.

No. 61.—Pruning Knife.—Price $1.—A very good Knife for the purpose. Will be sent, post-paid, for **2** subscriptions at $1.50 each; OR supplied for the price, post-paid.

Worth its Weight in Silver.

For a small article, we have for years past found nothing better worth its trifling cost (except, perhaps, the "Multum-in-parvo Knife,") than a set of steel tools packed inside of the handle which is used with each of them. There are screw-drivers, various brad-awls, gimlets, punches, etc., etc., 20 of them, and each one often comes into use in in-door and out-door work. It is appropriately called a **Pocket Tool Holder,** as one can carry it in the pocket, if need be, and its use in fixing a harness alone, on the road, and in the field, has in single instances been worth its full cost. The tools are taken out as wanted by unscrewing the head, and inserting the one to be used in the smaller end, when a twist



No. 62.

of the handle holds it firmly. This end vise will grasp tightly anything from an 8-inch mill-file to a cambric needle. We can send one, post-paid, to any part of the United States or Territories for $1; OR, we will **Present** one for **2** subscriptions at $1.50 each.

Time, Dimes, and Dollars Saved.

63.—Farmers need not to be told "Take care of the cents and the dollars will take care of themselves," but many of them can learn *how* to *save* pennies and dimes. For instance, not one in a hundred ever has or uses a simple Soldering Iron, yet many times a year two minutes time would stop a leak in a milk pail, or wash boiler, or pan, or dipper, or other tin vessel, saving time lost in sending such articles to the tinsmith, and waiting for the mending. In the course of a year the dimes paid out amount to dollars.—But any man, yes, and any woman too, can readily learn to apply Solder, and now there are neat sets of apparatus—a box or casket containing a Soldering Iron (copper) a Scraper, a Bar of Solder, and a box of Soldering Salts, with printed directions for using them. Such an apparatus (the "*Gem Soldering*

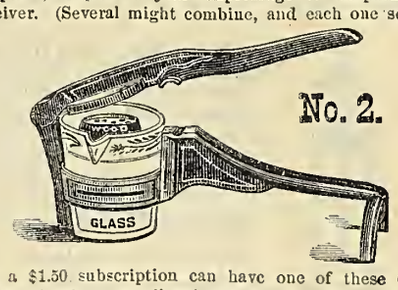
Casket") we can send anywhere in the United States, post-paid by mail, for $1.25; OR **present** it, post-paid, for **2** subscriptions, at $1.50 each.—It will be useful anywhere, and particularly so in distant Territories, remote from tinsmiths. Every family ought to have such an apparatus, and the boys and the girls learn to use it as a part of their practical education. Extra Solder can always be got by mail, when needed, for a few cents expense.

No. 64.—Hand-Drill.—Price 60c. An indispensable little instrument, without which no tool chest is complete. The drill stock and six drill points are

safely packed in a box, and given, post-paid, to any present subscriber sending **1** new subscription at $1.50; OR we will supply it, post-paid, for 60 cents.

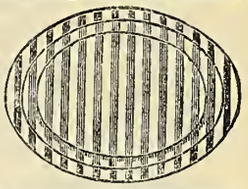
USEFUL HOUSEHOLD ARTICLES.

No. 65.—New Lemon Squeezer.—Price 75 cts. (including Cork-presser.) The best lemon-squeezer by far that we have ever seen is the "DEAN," recently brought out. Into a firm iron lever frame, standing on its own feet, is loosely set a strong thick glass with lip. This tumbler has a shoulder all round the inside, upon which stands an inverted hollow truncated cone, originally of wood but now earthenware, pierced with numerous holes through its top. Half a lemon (or lime, or orange) is turned upon this, and on depressing the lever all the juice falls into the glass. From this it is poured out by the lip as wanted, without spilling. Between the levers, at the right of the glass, is a good cork-presser or nut-cracker. The No. 2 size, 10-inch lever, half-pint glass, we can supply for 75 cents; OR one will be **Presented** to any subscriber sending a new subscription, at $1.50 a year—expressage to be paid by receiver. (Several might combine, and each one send-



ing a $1.50 subscription can have one of these convenient implements, all going in one parcel by express or freight, at little more cost than for carrying one.)

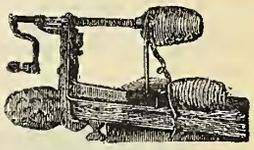
No. 66.—Six (6) Folding Table-Mats.—Price $1.00.—Very convenient and useful. Made of alternate strips of light and dark wood, oval-shaped, and polished. Sent post-paid for **2** subscriptions at $1.50 each; OR, we will supply them for $1.00, post-paid.



No. 67.—Bread-Mixer and Kneader.—Stanyan's Patent.—Price $3.25.—A very simple and labor-saving article.—The pan is seamless, of the heaviest tin, and all the other parts are iron. The bread block, which does the kneading, is polished and nickel

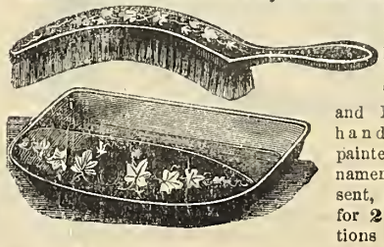
plated. It thoroughly mixes the dough, forcing the air through it, and stretching and rolling it into that elastic condition necessary to produce good bread. **5** subscriptions at $1.50 each will secure this popular and desirable premium; OR we will supply it for the price. The receiver to pay expressage in either case.

No. 68.—White Mountain Potato Parer.—Price $1.00.—This machine pares potatoes of almost any size or shape, better and thinner than it can be done by hand. It likewise extracts the eyes. **2** subscriptions at $1.50 each will secure this; OR we will supply it for the price Receiver to pay freight or express.



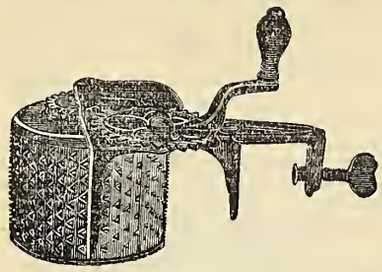
No. 69.—White Mountain Apple Coring and Slicing Machine.—Price $1.00.—This machine quickly and economically pares, cores, and slices the apple, leaving it all ready for drying or evaporating. **2** subscriptions at $1.50 each will secure this; OR we will supply it for the price. Receiver to pay freight or express, which is small.

No. 70.—Crumb-Tray and Brush.—Price $1.—A very popular Premium. The Tray and Brush are handsomely painted and ornamented. Both sent, post-paid, for **2** subscriptions at $1.50 each; OR we will supply the two, post-paid, for $1.00.

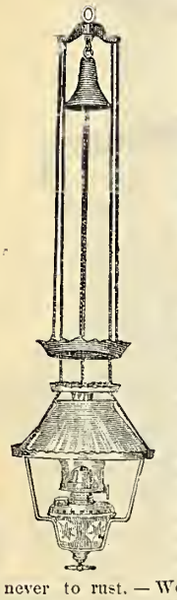


All the above Premiums are most serviceable Articles.

No. 71.—Revolving Grater.—Price $1.00.—Very convenient for grating cocoanut, horseradish,



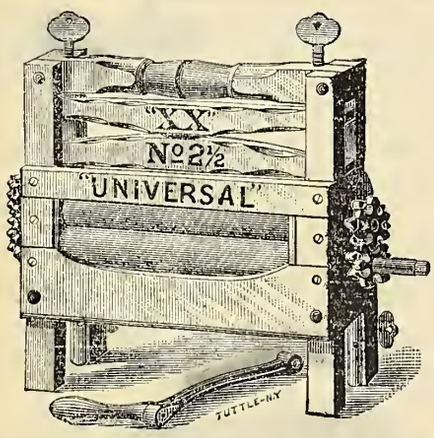
squash, and other vegetables. Sent post-paid for **2** subscriptions at $1.50 each; OR mailed, post-paid, for the price.



No. 72.—Hanging Lamp.—Price $4.25.—This Lamp can be used for Hall, Library, Dining, or any other room. It is called the "Meriden," is finished in Nickel and Polished Brass, and has a ten-inch shade. A very popular premium. **6** subscriptions at $1.50 each will secure the lamp; OR we will supply it for the price. Expressage to be paid by the receiver.

No. 73.—The Best Bed.—Whatever one's occupation, very much of vigor, strength, and efficiency depends upon resting well at night, and the kind and quality of one's bed has much to do with this. Sleeping on feathers is wisely discarded for obvious sanitary reasons, though most retain them for pillows. Good curled hair pillows are far better.—Of all contrivances for mattresses, the latest and best are mattresses of steel wires, arranged with spring coils, all the metal being well tinned so as never to rust.—We have been using those manufactured by the NATIONAL WIRE MATTRESS CO., and have found them most excellent.—They are made of sizes to suit any bedstead, and arranged to be folded into small space for transportation. They are as elastic as the best curled hair mattress, cost not half so much; are dustless, require no picking over after long use, and are every way desirable. Such a bed is restful and refreshing; and allowing double interest on cost, the expense is less than a third of a cent per day (or night). We wish every one of our readers could sleep on such a mattress.—We can supply one, of any size desired, shipped on the cars, for $10—OR we will **Present** one for **11** subscriptions to the *American Agriculturist* at $1.50 a year. Freight to be paid by the recipient.

No. 74.—Universal Clothes Wringer.—Price $6.00. A very useful Household Implement; does not tear the clothes, and is so arranged that it will wring fine Laces, or the heaviest Bed Quilts, in quarter the time, and better than it can be done by hand. It is



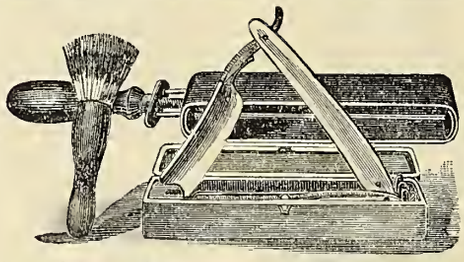
of the very best make, and has the springs and cogs which prevent the slipping of the rollers and consequent injury of fabrics produced by most kinds of Wringers. We will **Present** one of these fine Wringers to any one who will forward us **9** subscriptions at $1.50 each; OR will send it for the price. Receiver to pay freight.

No. 75.—Bed Room Toilet Set.—Price $6.00.—This Set is made of Porcelain, handsomely figured, and consists of eleven pieces. We will **Present** it Free to any one who will send us **8** subscriptions at $1.50 each: OR we will supply it for the price. Receiver to pay expressage in either case.

No. 76.—Parlor Night Lamp.—Price $1.00.—This very handsome little Lamp for night use, is vase-shaped, made of Bohemian glass, in either Pink or Blue, and is altogether a very useful and pretty article to have for hand use. We will furnish it, securely packed, for **2** subscriptions at $1.50 each; OR we will supply it for the price. Receiver to pay expressage in either case.

No. 77.—Dinner Set.—Price $30.00.—This Dinner Set consists of 179 pieces, and is from the best White Stone Porcelain. A handsome new design. **38** subscribers at $1.50 each will secure this Premium, all boxed and ready for shipment; OR we will supply it for the price. The Receiver to pay expressage in either case.

No. 78.—Shaving Set.—Price $5.75. This very useful Premium consists of a pair of English Razors, in a neat box, one of Goldsmith's Razor Strops, and a Camel's Hair Shaving Brush. A very elegant present



from a lady to a Father, Brother, or Gentleman friend. We will **Present** this *Set*, post-paid, to any one who will send us **7** subscribers at $1.50 each; OR we will supply it, post-paid, for the price.

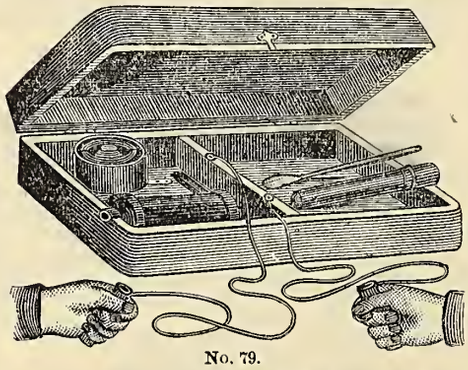
The American Electro-Magnetic Battery.

Price $3.00, post-paid.

Many persons find relief in nervous affections from the use of that form of electricity, produced by what is known as

THE ELECTRO-MAGNETIC BATTERY.

In this a rapid succession of very minute shocks, the strength of which may be regulated at will, of what is known as an "induced current" is produced. The great objection to the remedial application of this form of electricity, has heretofore been the cost of the apparatus. In the battery now offered, the essential parts are exceedingly simple, and nothing is expended on ornament. Here the Galvanic battery, an essential part in all forms of apparatus of this kind, as it is the motive power, is a model of simplicity. It consists of a small carbon cup, which holds the exciting fluid, within which is suspended a small cylinder of zinc. This does away with the glass



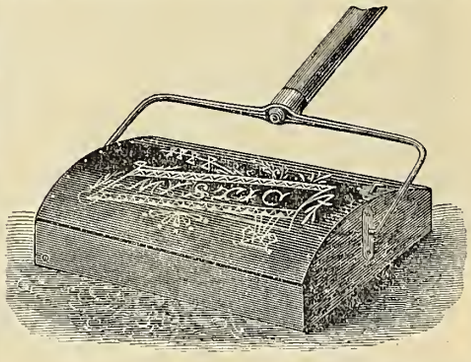
No. 79.

or porcelain cups commonly used, and avoids all danger of breakage. The battery is not excited by acids, but a little water being placed in the cup, a small quantity of the Bisulphate of Mercury, a dry powder, is added, and the battery at once operates. The use of Bisulphate of Mercury obviates all danger to clothing, carpets, etc., so apt to follow the use of acids in inexperienced hands. The moment the Bisulphate of Mercury and water are placed in the carbon cup—and it requires but about a table-spoonful of water, and a small amount, the measure for which is furnished, of the Bisulphate, and the Zinc is put in place, the action of the Electro-Magnetic Machine commences. By the drawing out of a cylinder, the force of the shocks is increased, and they may be so light as to be merely noticeable, or increased to a strength quite as great as one cares for. It is hardly possible that anything more simple, and at the same time effective, can be contrived in the way of an Electro-Magnetic Battery. Bisulphate of Mercury, when the supply furnished with the Battery is exhausted, may be had at the drug stores at a moderate price. One of these Batteries will be sent, post-paid, to any one who will send us **5** subscribers at $1.50 each; OR we will send it, post-paid, for the price.

Always Good, Everywhere.

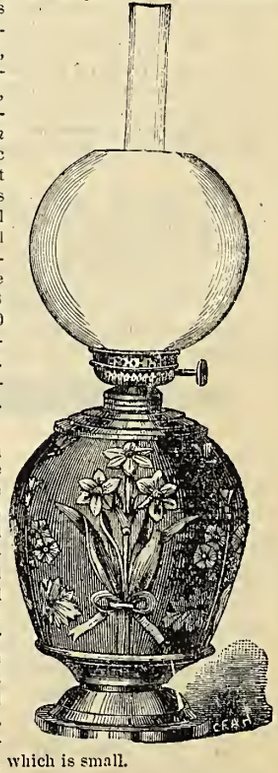
80.—There is hardly any greater convenience or better health saver than one or more *India Rubber Blankets*, as a water-proof cover to throw over one's shoulders, over a woollen blanket on a horse standing in the rain, over one's lap in riding in wet weather; to put under young children at night; to cover anything exposed to storm, etc., etc. We can now supply good blankets of this kind, of usual size, and send them anywhere in the United States or Territories, *post-paid*, for $2; OR we **Present** and mail one for **3** subscriptions at $1.50 each.

No. 81.—The "Mystic" Carpet Sweeper.—Price $2.50.—The "MYSTIC" Carpet Sweeper, with its two elastic brushes of bristles, while not wearing the carpet like the stiff brush of a broom, perfectly gathers the *dust*, *lint*, loose fibres and threads, bits of paper, etc., and even nails. It sweeps 10 inches wide, works both ways, pushed or pulled, deposits the material in its own boxes, from which it is



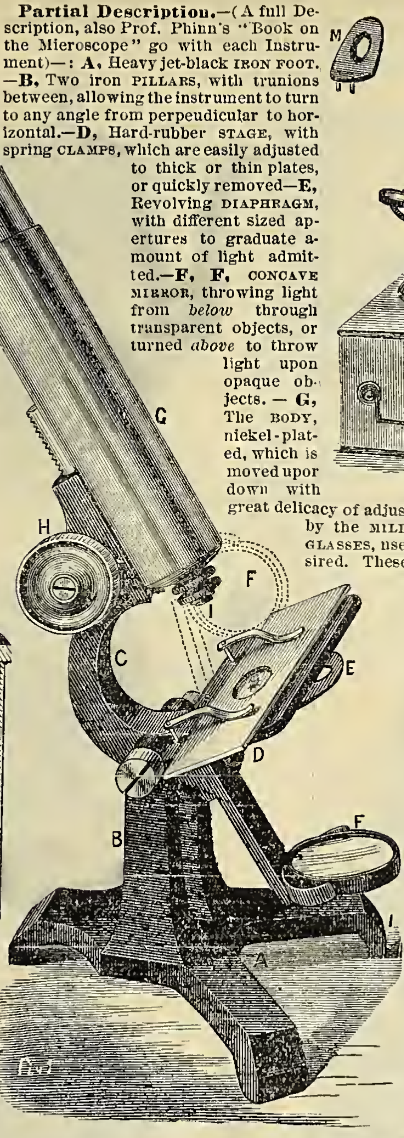
instantly dropped out when and where wanted by simply touching a spring. The person sweeping stands erect, not stooping, and works it with either hand. The handle is instantly removed by a spring, for setting aside in a small closet.—We can supply one of these "Mystic Sweepers" for $2.50; OR we will **Present** one for **5** subscriptions at $1.50 each—expressage to be paid by recipient.

No. 82.—Parlor Lamp.—Price $6.00.—This elegant Premium, as shown in the engraving, is a Majolica Vase, very handsomely decorated and mounted, especially for Premium for the *American Agriculturist*. The Burner is of the latest improved style. This will make a beautiful holiday gift. We will send this lamp securely packed to any one who will forward us **8** subscriptions at $1.50 each; OR we will supply it for the price. Receiver to pay expressage in either case.



No. 83.—China Tea Set.—Price $13.00.—This handsome Tea Set is of French China, white, with gold bands. The set consists of 56 pieces. All will be securely packed in a box for shipping. We will send this very substantial Premium for **18** subscriptions at $1.50 each; OR we will supply it for the price. Receiver to pay expressage in either case, which is small.

Write us for any desired information regarding Premium articles or anything not on the List.



Partial Description.—(A full Description, also Prof. Phinn's "Book on the Microscope" go with each Instrument)—: **A**, Heavy jet-black IRON FOOT. —**B**, Two iron PILLARS, with trunions between, allowing the instrument to turn to any angle from perpendicular to horizontal.—**D**, Hard-rubber STAGE, with spring CLAMPS, which are easily adjusted to thick or thin plates, or quickly removed—**E**, Revolving DIAPHRAGM, with different sized apertures to graduate amount of light admitted.—**F**, **F**, CONCAVE MIRROR, throwing light from *below* through transparent objects, or turned *above* to throw light upon opaque objects. — **G**, The BODY, nickel-plated, which is moved upor down with great delicacy of adjustment of focus, by the RACK and PINION, moved by the MILLED HEADS (one seen at **H**).—**I**, Two OBJECT GLASSES, used separately or together, according to power desired. These, the most important part of any Microscope, are of very superior quality.—**L**, is a nickel-plated DRAW-TUBE, 3¼ inches long, adding materially to the length of the body when higher magnifying power is desired.—**K** (shown in section at the left, in fig. 2), is a very complete EYE-PIECE, with all the parts of the most costly Microscope, as FIELD glass, **Q**; DIAPHRAGM of black metal, **P**; EYE-GLASS, **O**.—All parts of the eye-piece are mounted in frames and removable screws. —— Fig. 3. — The **Camera Lucida** is a new and most valuable appliance for throwing the image of any object, magnified to any desired size, upon paper in a way to be easily sketched with a pencil by any person, or by a child, if old enough to trace lines and marks with a pencil.

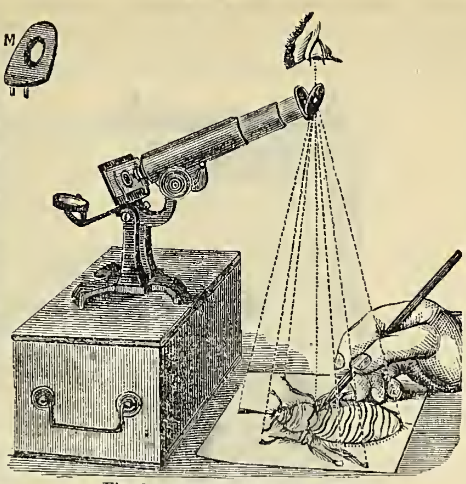


Fig. 3.—CAMERA LUCIDA IN USE.

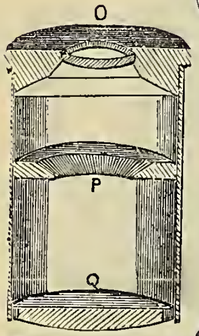


Fig. 2.—EYE-PIECE.

A Wonderful Instrument.

For Every Family and Every Individual.—Should also be in Every Public and Private School in the whole Country.—It Reveals a Beautiful and Wonderful Unseen World all around us.—To be obtained at One-fifth of former prices.—The New *American Agriculturist* COMPOUND MICROSCOPE.——A Remarkable Instrument, that will afford a World of Interest and Pleasure to Old and Young, besides being very Useful.

In no other way that we can conceive of, can a small sum be so well invested to afford interest, pleasure, and instruction.—After years of effort and experiment, the Editors of the *American Agriculturist* succeeded in having Automatic Machinery take the place of slow and less accurate handwork in producing a very effective, convenient, and *powerful* **Compound Microscope,** and at a cost of only *one-fifth* to *one-tenth the price charged for an equally effective and useful instrument not many years ago, including the* **Camera Lucida.** (This *Camera* enables a child even to sketch and preserve in large size the most minute objects—those unseen or scarcely observable by unaided eyes.)—This Microscope Magnifies small and invisible objects from **600 to 10,000 times,** and reveals a beautiful, wonderful world of objects all around us, *far more numerous than all* we can see with the natural eyes.—For example, the fine dust on a Caterpillar or Moth is shown as great feathers, **2** to **4** inches long, of exquisite design and construction; and so of thousands of other things. It is very useful for Physicians, for investigating destructive and other farm insects, fungus, foul seeds, diseases, etc., and for all scientific investigations except a few of the more minute observations of specialists. It has the unqualified and high praise of Distinguished Scientists, who commend it to their students, and is yet so simple and easily managed with the plain instructions and Book accompanying it, that the common people can readily use it, and with **GREAT PLEASURE and PROFIT.**

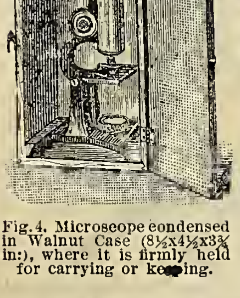


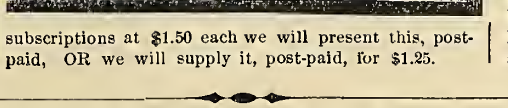
Fig. 4. Microscope condensed in Walnut Case (8½x4½x3¾ in:), where it is firmly held for carrying or keeping.

(N.B.—This Componud Microscope is no cheaply-made instrument, but is carefully and thoroughly constructed in all its parts, in the very best manner, by the best Optical Manufacturers in the country.)

84.—Though fully equal to Microscopes formerly sold for $30 to $50, or more, *without* the Camera Lucida, this new instrument is supplied with the Camera Lucida attachment, all complete, to the public at $15, and to Subscribers to the *American Agriculturist* (for whom it was specially designed,) for $10.—Further, it is **Presented** to any one forwarding **10** subscriptions at the regular price of $1.50 each.—The instrument is packed in its own convenient Walnut Case (fig. 4), and this is put in a wooden box, and sent *safely* anywhere by express at small cost for carriage—to be paid by the recipient. Glasses, Specimens, etc., go with each instrument.

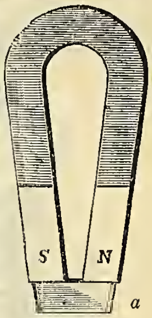
N. B.—*Any one desiring the above Microscope for immediate use, or as a present, can forward* $10 *and receive it, and deduct the* $10 *if he should afterwards make up a Premium Club for it, as above offered.*

No. 85.—Thermometer.—Handsome walnut frame; 8 inches long. Standard manufacture. For **2** subscriptions at $1.50 each we will present this, post-paid, OR we will supply it, post-paid, for $1.25.



An Instructive Scientific Toy.

Few farmers' boys, or other boys, for that matter, understand how much of interest can be got out of a small **Steel Magnet,** here illustrated. It is of horse-shoe shape, of hard steel, with a soft iron Armature, *a*, which it holds up when not in other use. The horse-shoe part, if bent out straight and hung in its middle, will turn the N end to the north. Rub the blade end of a pocket knife on the S end, hang the knife by a thread and its end will point North, and the handle will point South. Rub the knife blade on the South arm of the magnet, and it will then point North. Rub two knife blades on the same end of the magnet and they refuse to have anything to do with each other, unless forced to. Rub one blade on one arm of the magnet and the other blade on the other arm, and the two blades will cling together with loving affection.—Rub sewing needles or knitting needles on the magnet ends, and float them on water with a bit of wood; the end rubbed on the S end will turn towards the North Star. The knife or any hard steel rubbed on the magnet will pick up needles, small nails, several small tacks, etc. There are many other curious experiments to be made with such a magnet, and every Boy and Girl ought to have one.—We can send a very good 6-inch one (bar 13 inches long, weight 11 ounces), anywhere in the U. S., post-paid, for 60 cents; OR we will **Present** one to any boy or girl sending us a *new* subscriber at $1.50 a year.

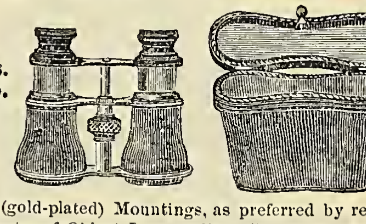


No. 86.

87.—A stronger 8-inch magnet (bar 18½ inches long, weight 21 oz.) will be sent for $1.25, or for **2** subscriptions.

Two Good Binoculars, or "OPERA GLASSES."—These are magnifying glasses for seeing objects at considerable distances, as well as in public gatherings—with both eyes (*bin-ocular*). They are adjustable by screw and movable eye-pieces to different eyes and varying distances. They are enclosed in a Leather Case, for carrying in one's pocket. No. 88 is in either Jet or

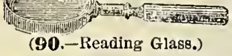
88.
89.



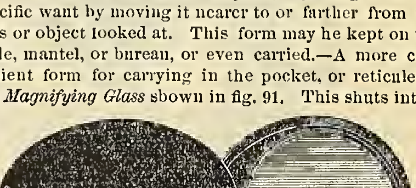
Gilt (gold-plated) Mountings, as preferred by recipient. Diameter of Object Lens, 15-lines (1¼ inch). This is of excellent make, and we will supply it, post-paid, for $6; OR **Present** it, post-paid, for **8** subscriptions at $1.50 each.—No. 89 is very similar to the above, but larger, having 17-line (1$^5/_{12}$ inch) Object Lens, and in the new Oxidized Mountings. This we supply, as above, for $7, or for **9** subscriptions at $1.50 each.

Two Simple, Cheap, Very Useful Glasses.

Some kind of a simple *Magnifying Glass*, of large diameter and low power, is a great convenience to every person. Before adopting Spectacles permanently, or when they weary the eyes, or when they are too weak, a broad *lens* is very useful, one with a handle, (like fig. 90) to hold before the eyes in reading, in examining any small work or objects, adjusting it to the specific want by moving it nearer to or farther from the eyes or object looked at. This form may be kept on the table, mantel, or bureau, or even carried.—A more convenient form for carrying in the pocket, or reticule, is the *Magnifying Glass* shown in fig. 91. This shuts into a neat hard rubber case of its own, and is of smaller diameter and higher magnifying power than No. 90. Either of them is strong enough to examine the ordinary parts of a flower, common insects, etc., and either one can be used as a sun glass, to produce fire by concentrating the heat of the sun's rays. We can send anywhere, post-paid by mail, No. 90 for $1.50 (diameter of lens 3¼ inches), or No. 91 for $1.20 (diameter 1¾ inches); OR we will **Present** either one, post-paid, for **2** subscriptions at $1.50.



(**90.**—Reading Glass.)



(**91.**—Magnifying Glass.—Engravings less than half size.)

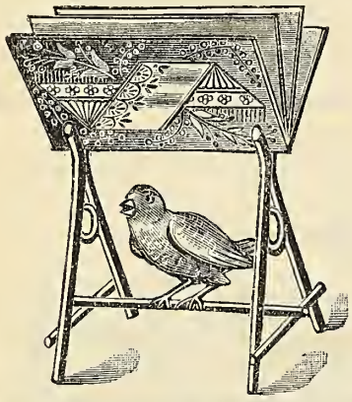
USEFUL, DURABLE SILVER-PLATED WARE.—VERY LATEST PATTERNS.

The so-called plated ware sold generally is cheap "*pewter*," beat or cast into good form, and *covered* with the merest film of silver. Until proved by a little wear, few people can detect the frand.—BUT honest plated ware, with a heavy coat of genuine silver, put on good white metal, so as not to show when corners or small spots are worn off by hard usage, if in good style, *is just as good for use*, and looks as well, as solid silver ware that costs several times the price, and involves a constant fear of robbery, or loss by fire, and in many States is subject to taxation.—To meet the wants of our Readers, and for Premiums, we have selected some articles named and described below, which we know to be good, double or quadruple plated on white metal, and of newest styles. Lower-priced similar looking articles abound; *these are as good as can be made at the prices* named, and will give general satisfaction in the future as well as present. *They will all be well packed, without charge for boxing. Expressage or freight to be paid by recipient, except those which can be sent by mail.*

No. 92.

92.—Dinner Caster.—Price $6.00.—This very elegant Dinner Caster, is of that new and attractive style, with tall graceful bottles of cut glass, and lapidary stoppers. The bottles are delicately engraved, and with double screw silver tops. It is mounted in quadruple plate, and handsomely chased in butterflies and daisies. It is not only beautiful, but designed for long service. Given for **6** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage.

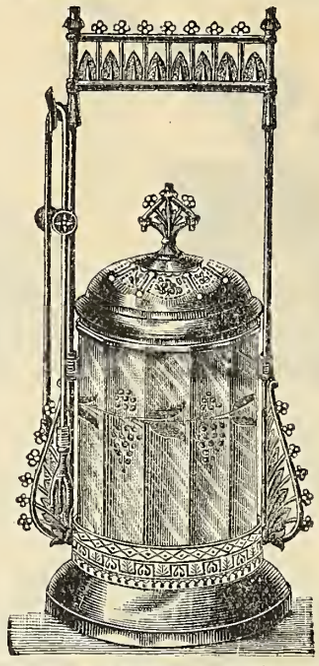
93.—Card Rack.—Price $6.50.—This Card Rack is in the form of a book. Its Cover gilt-lined, and finely engraved. The leaves are of frosted silver. The outside is beautifully embossed, and a Gilt Parrot clings to the rod



below. It is quadruple plate, and is very useful as well as ornamental. **7** subscribers at $1 50 each will secure this elegant Card Rack; OR we will supply it for the price. Receiver to pay expressage.

No. 94.—Child's Cup.—Price $3.50.—Triple plated on the outside, and *gilded* inside; will last for years, and makes an elegant present for parents to give to a little son or daughter. **5** subscribers at $1.50 each, will secure one of these beautiful Cups for your own Child, or a namesake, or other favorite, post-paid; OR we will forward one, post-paid, on receipt of $3.50.

95.—Pickle Caster.—Price $2.75.—This charmingly engraved Pickle Jar is mounted very neatly in quadruple plate. The handle is a new and stylish design. The Cover is beautifully engraved, and base-band, and

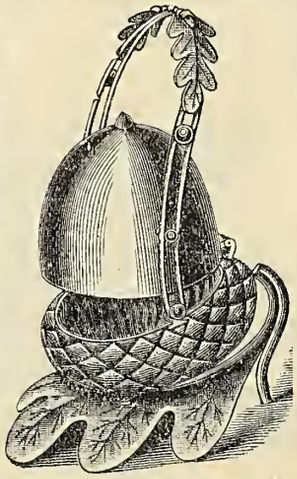


side ornaments are of choice workmanship. The tongs at its side are delicate and add much to its beauty. Will be **Presented** to any one who sends us **3** subscribers at $1.50 each; OR supplied for the price. Expressage to be paid by the receiver.

96.—Tray.—Price $44.—Very fine in every respect. It is 24 inches long, and wire-strengthened, which gives it great strength for service. It is quadruple plate and warranted to last many years. Given for **44** subscriptions at $1.50 each; OR supplied for the price. Receiver to pay expressage.

97.—Tea Set.—Price $42.—This elegant Tea Set comprises six pieces—Coffee Pot, Tea Pot, Hot-Water Pitcher, Sugar Bowl, Creamer and Slop Bowl. The entire set is richly and delicately engraved, with medalions for monograms. The four large pieces have very richly embossed covers, and the knot to cover is a bouquet of flowers. The entire set are on handsomely carved feet, ornamented with antique heads. Sugar Bowl and Creamer are gilt-lined. Given for **42** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage.

98.—Patent Jewel Case.—Price $7.00.—This attractive Jewel Case is unique indeed. By pressing back the handle, the Acorn opens as if by magic, showing the gold-lined Cover, and satin-lined Cup below. It is a jewel in itself, an acorn resting on an acorn leaf, inclined just enough to relieve it of stiffness. It is quadruple plate, and something very novel. **Presented** for **7** subscribers at $1.50 each; OR will be supplied for the price. Express charges to be paid by receiver.



99.—Flower Vases.—Price $4.00 each.—This lovely hand-painted Vase is eight inches in hight, and decorated with birds, flowers, and charming grasses. It is formed in delicate tints, pink, pale blue, pale green, and salmon. It is elegantly mounted with filagree side-ornaments and feet. Of quadruple plate, and warranted to last for years. Given for **4** subscribers at $1.50 each; OR sent for the price. Receiver to pay expressage.

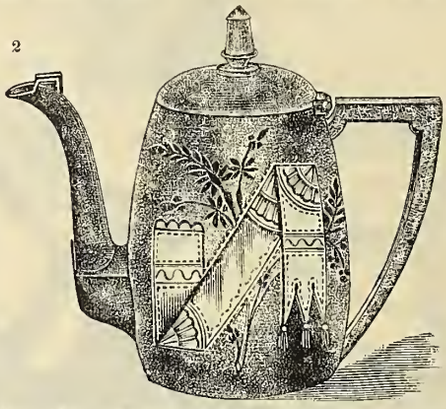
100.—Tea Set.—Price $56.—This Tea Set is just out—something entirely new. Very artistically engraved, and magnificent in every part. Its beauty can not be described. Warranted quadruple plate. Will be sent free to any one who will send **56** subscribers at $1.50 each; OR we will supply it for the price. Receiver to pay expressage.

1

TETE-A-TETE SET.

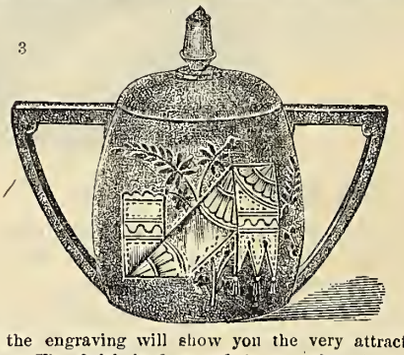
101.—Tete-a-tete Set.—Price $19.00.—This very interesting and dainty Tea Set, consists of 4 pieces—

2



Tea Pot, Sugar Bowl, Coffee Pot, and Creamer. They are quadruple plate, finely chased,

3



and the engraving will show you the very attractive shape. The finish is fine, and is very charming as a

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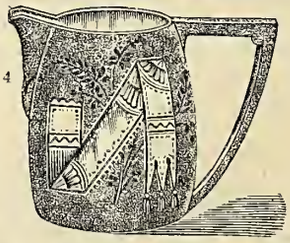
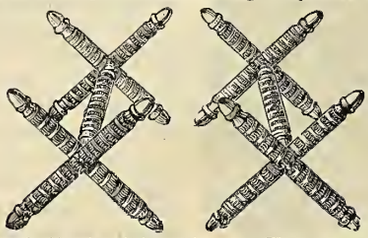


group. Given for **19** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage in either case.

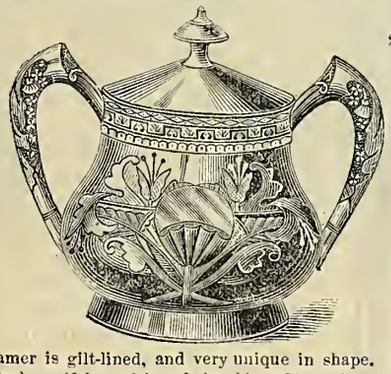
No. 102.—Pair of Knife Rests.—Price 75c.—The person who carves at table will always find these little things convenient, being receeptacles for the



carving-knife when it is not in use. They are made of steel, and nickel-plated. Any present subscriber sending us **1** *new* subscription, at $1.50, will get these, mailed post-paid; OR supplied for the price, post-paid.

103.—Tea Set.—Price $18.00.—This elegant Tea Set, consisting of **Tea Pot, Creamer,** and **Sugar Bowl,** is of quadruple plate, and beautifully ornament-

ed on either side, leaving a place for monogram. Bands of finely chased work encircle them, as you will see in the engraving, and the handles are richly engraved. The



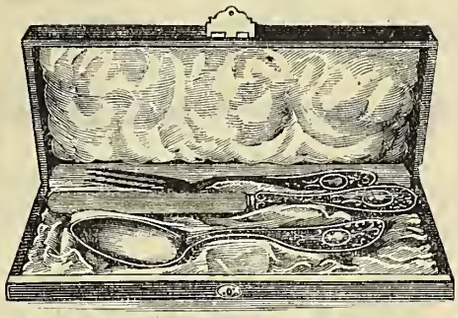
Creamer is gilt-lined, and very unique in shape. This set is beautiful, useful, and durable. Given free to any one who will send **20** subscriptions at $1.50 each; OR

will be sent for the price. Expressage to be paid by receiver.

104.—Spoon Holder.—Price $3.25.—This engraved Rock Crystal Cup is mounted in a delicately frosted silver holder. The stylish handles, the filagree supports at its base, the carefully engraved vine leaves

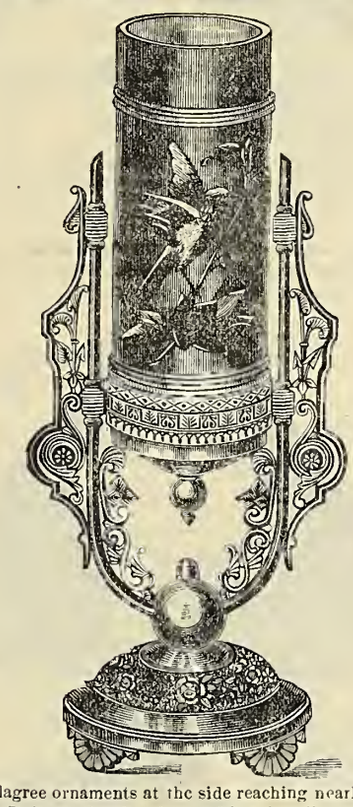
which seem to fasten it to the hand near its top, all combine in making it a very lovely article for the table or side-board. Given for **4** subscribers at $1.50 each; OR sent for the price. Expressage to be paid by receiver.

105.—Breakfast Caster.—Price $3.25.—This Breakfast Caster consists of three bottles, finely cut, and engraved, is of quadruple plate, and embossed in a very lovely style. Given for **4** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage in either case.



No. 106.—Child's Knife, Fork, and Spoon.—Price $3.00.—One of the most popular presents has been this very handsome Silver Plated Set, on white metal base, medallion pattern. The articles are inclosed in a morocco case, satin-lined. We send the set, including case, post-paid, for **4** subscriptions at $1.50 each; OR on receipt of price.

107.—Flower Vase No. 3.—Price $5.00.—This elegant vase is formed in all the charming tints of pale pink, blue, green, and acru, and very beautifully decorated. The lovely designs of birds, flowers, etc., are all done by hand. It is eleven inches in hight,

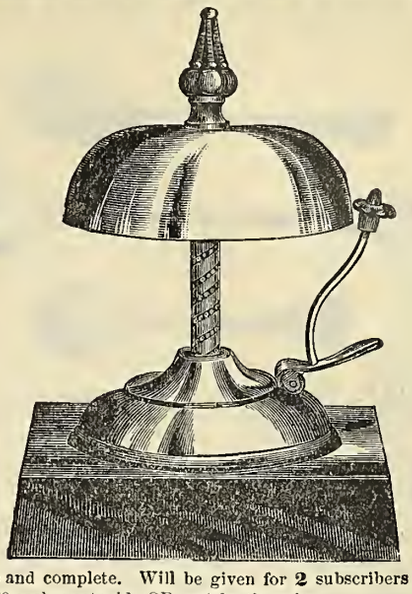


the filagree ornaments at the side reaching nearly to the top. It is quadruple plate, with a heavily embossed wreath at the base. It is really a thing of beauty. Given for **5** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage.

108.—Spoon Holder.—Price $6.75.—This lovely article is very richly engraved, quadruple plate, gilt-lined, and ornamented with richly embossed feet and handles. It is valuable and useful. The engraving will

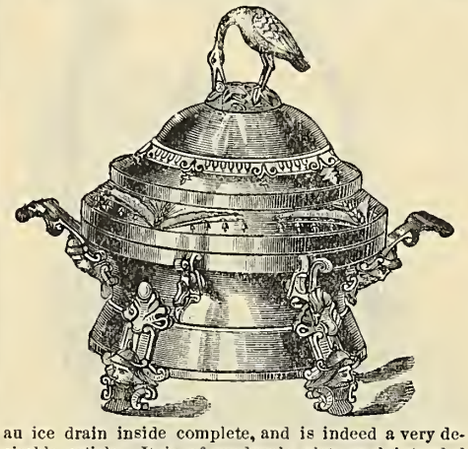
show you its unique form. Sent for **7** subscriptions at $1.50 each; OR supplied for the price. Expressage to be paid by the receiver.

109.—Call Bell.—Price $1.25.—Call Bell of fine quadruple plate, with black metal Base—all very attrac-



tive and complete. Will be given for **2** subscribers at $1.50 each, postpaid; OR sent for the price.

110.—Butter Dish.—Price $7.00.—This pretty Butter Dish is rich in all its parts. A graceful stork stands upon its top, forming the handle of Cover. Antique heads ornament the feet and side handles. Graceful supports are upon one side for butter knife. It has



an ice drain inside complete, and is indeed a very desirable article. It is of quadruple plate, and intended for durability. Given for **7** subscribers at $1.50 each; OR will be sent for the price. Receiver to pay expressage.

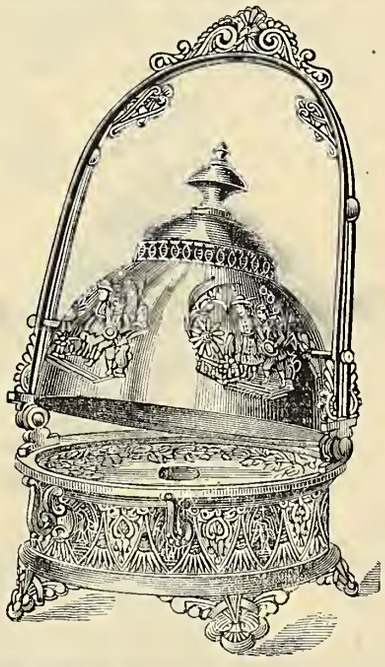
111.—Card Receiver.—Price $7.00.—This finely ornamented Card Receiver is gilt-lined and beautifully surrounded with fine open filagree. Poised above it sits a Gilt Parrot in its ring. The article is of quadruple

plate, and extremely artistic and new in design. Sent for **7** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage.

112.—Sugar Tongs.—Price $2.00.—Beautiful and useful. Made Crown Pattern, Extra Plate. Sent for **3** subscribers at $1.50 each; OR supplied, post-paid, for the price.

113.—Sugar Shell—Mustard Spoon—Salt Spoon.—Price $2.00.—Like the Sugar Tongs, these tasteful articles are Double-Plated, Crown Pattern. For **3** subscribers at $1.50 each, we will send all three post-paid; OR send them, post-paid, for $2.00. A very popular Premium.

114.—Butter Dish.—Price $9.50.—This Magic Butter Dish opens by a light pressure on the handle, revealing a beautifully engraved gilt-lining. The Ice Drainer is of Crystal, and the outside engraving is artistic indeed, giving a beautiful series of figures in pursuit of



buttercups and daisies. A very appropriate design. It is quadruple plate, and has a finely finished rest for the Butter Knife. Given for **9** subscribers at $1.50 each; OR sent for the price. Expressage to be paid by the receiver.

No. 115.—Nut Picks and Cracker.—Price $2.25.—One-half dozen Nut Picks and a Nut Cracker, in a handsome case. They are made of steel throughout,

chased with handsome designs, and heavily nickel-plated. They are substantial, and will last long in use. For **4** subscriptions at $1.50 each, we will **Present,** post-paid, this set and case; OR we will supply them, post-paid, for the price. A popular Premium last year.

No. 116.—Silver-Plated Knives and Forks.—Price $12.00.—This set is composed of 12 Knives and 12 Forks, all heavily plated on the best steel, and are a very superior article. Any one can obtain them by forwarding us **12** subscribers at $1.50 each; OR we will supply them for the price. Sent post-paid.

117.—Butter Knife.—Price $1.25.—Very handsome, heavily Triple-plated on white metal. Crown Pattern, and designed for long service. We send it, post-paid, for **2** subscribers at $1.50 each; OR supply it for the price.

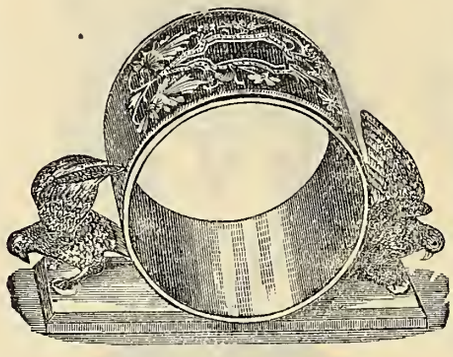
SPOONS AND FORKS, which in form and appearance would not be distinguished from fine Coin Silver Articles.—All *heavily* plated on the best White Metal and very durable for wear. They will be supplied, post-paid, for the price, OR **Presented** as stated below; 10 cents extra if to be sent in "Registered Mail."—Initials or names neatly engraved on them if desired, for 4 cents for each letter for initials, or 3 cents per letter if full surname is put on.

Style of Premium Spoons.

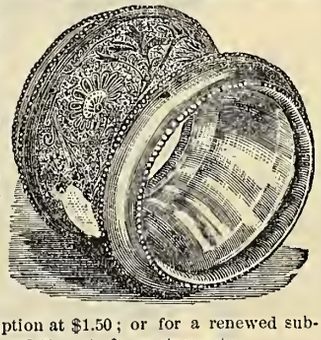
118.—One Dozen Tea-Spoons.—Price $7.25.—Sent for **9** subscriptions at $1.50 each. Sent, post-paid, in either case.

119.—One Dozen Table-Spoons.—Price $14.50.—Sent for **16** subscriptions at $1.50 each. Sent, post-paid, in either case.

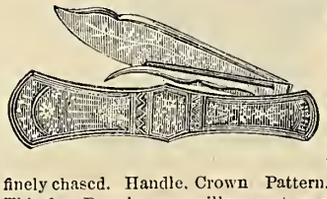
120.—One Dozen Table-Forks.—Price $14.50.—Sent for **16** subscriptions at $1.50 each. Sent, post-paid, in either case.



121, 122.—Two Napkin Rings.—No. 121, handsomely chased and supported by stand and two pretty doves. Supplied and sent, post-paid, for $1; OR **Presented** for **2** subscriptions at $1.50 each.—No. 122, of handsome design, (see engraving); supplied, post-paid, for 80 cents; OR **Presented** for **1** *new* subscription at $1.50; or for a renewed subscription at $1.50, and 10 cents for postage, etc.

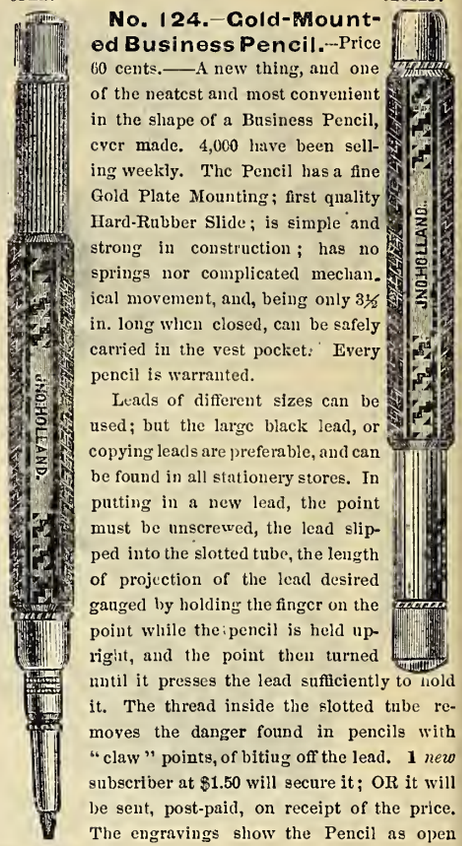


123.—Fruit Knife and Nut Pick.—Price $1.50.—In one handsome handle are combined two useful articles, both opening to spring back. It is a very popular Premium. Blade finely chased. Handle, Crown Pattern. Heavily Plated. This fine Premium we will present, post-paid, for **2** subscribers at $1.50 each; OR supply it, post-paid, for $1.50.



Splendid Premium for ONE NEW Subscriber.

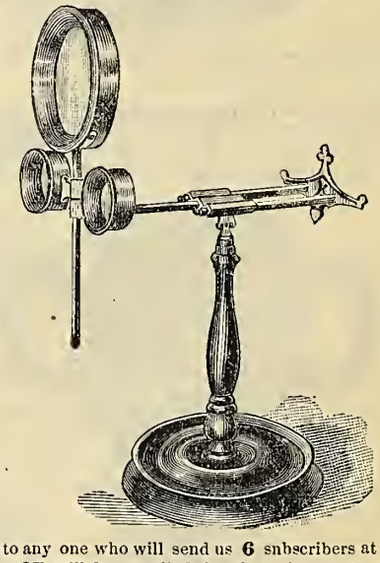
OPEN. CLOSED.



No. 124.—Gold-Mounted Business Pencil.—Price 60 cents.—A new thing, and one of the neatest and most convenient in the shape of a Business Pencil, ever made. 4,000 have been selling weekly. The Pencil has a fine Gold Plate Mounting; first quality Hard-Rubber Slide; is simple and strong in construction; has no springs nor complicated mechanical movement, and, being only 3½ in. long when closed, can be safely carried in the vest pocket. Every pencil is warranted.

Leads of different sizes can be used; but the large black lead, or copying leads are preferable, and can be found in all stationery stores. In putting in a new lead, the point must be unscrewed, the lead slipped into the slotted tube, the length of projection of the lead desired ganged by holding the finger on the point while the pencil is held upright, and the point then turned until it presses the lead sufficiently to hold it. The thread inside the slotted tube removes the danger found in pencils with "claw" points, of biting off the lead. **1** *new* subscriber at $1.50 will secure it; OR it will be sent, post-paid, on receipt of the price. The engravings show the Pencil as open and closed.

No. 125.—Graphoscope.—Price $5.00.—This Instrument is especially adapted for the center table in any Household, it is in itself an ornament, and also an aid in instruction. By its use, pictures of any kind and sizes may be magnified, or reduced in size, as the observer may fancy; it is so simple in construction, that a child may adjust the eye-pieces, and it is impossible to get it out of order. When not in use, it can be folded up and put away in a neat box, which accompanies each instrument. One of these Graphoscopes complete, will be sent

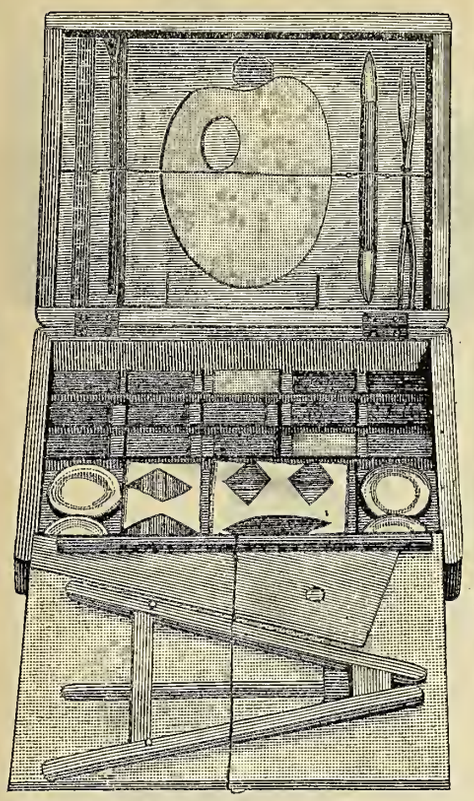


free, to any one who will send us **6** subscribers at $1.50 each; OR will be supplied for the price, post paid, in either case.

No. 126.—Caskell's Compendium.—Price $1.00.—By means of this Compendium, one can acquire a beautiful hand writing without a teacher, on the self-teaching system. It embraces a full series of copy slips, book of instructions for ornamental flourishing, drawing, and ladies' penmanship, etc., etc. A large number were sent as premiums last year, and gave general satisfaction. We present this for **2** subscriptions at $1.50 each, OR send it on receipt of the price.

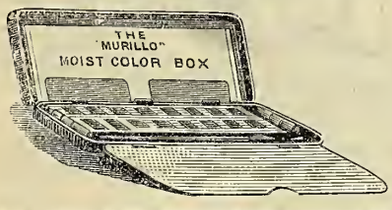
All our Premiums are shipped with great care.

ARTIST MATERIALS.



127.—The Satchel Box of Paints.—Price $2.00.—This new and handy box contains a complete set of materials necessary to an artist—12 fine crayons (all colors), 6 black crayons, 15 large cakes of imported water colors, 4 paint saucers, brushes, pallette, crayon holder, ruler, easel, pencil, crayon stump, triangle, etc., put up in a folding polished wooden box, size, 6 by 8. **3** subscriptions at $1.50 each, will secure this post-paid; OR we will send it for the price.

128.—"542" Box of Water Colors.—Price $1.25.—This box of superior paints is furnished with 16 *large* cakes of the best imported colors, 2 camel's hair brushes, paint saucers, copies for painting, etc., all neatly encased in a polished wooden box, size 6 by 8. **2** subscriptions at $1.50 each, will secure this; OR we will send it, post-paid, on receipt of the price.



129.—The "Murillo" Moist Color Box.—Price $1.25.—Containing sixteen pans of superior *moist colors*, and tubes of Chinese white and Sepia, and four brushes. Full directions for using accompany each box. Size, 4 by 8, with folding cover. Can easily be carried in the pocket. **2** subscriptions at $1.50 each, will secure this: OR we will send it, post-paid, on receipt of the price. Put up in metal dishes.

130.—Box Gold and Silver Paint.—Price $1.00.—Containing material for decorating any article in either gold or silver. Complete directions with each box. A very handy article for gilding picture-frames, placques, etc. **2** subscriptions at $1.50 each, will secure this, post-paid; OR we will send it, post-paid, on receipt of price.

No. 131.—Box of Oil Colors.—Price $5.00. This box of extra fine colors includes everything necessary for painting in oil, viz: Brushes, Palette, full set of Colors, Varnishes, Stump, Palette-knife, Sancers, all put up in a japanned metal box, ready for use. Makes a most appropriate present to anybody. **7** subscribers at $1.50 each, will secure this; OR we will supply it for the price. Receiver to pay expressage.

No. 132.—Color Box.—Price 75 cents.—Fine inlaid wood box, with Lock and Key. Chromo on inside of cover. Contains 20 cakes of Paint, Brush, and two Cups. A superior box for beginners. Post-paid to any present subscriber sending us **1** new subscription at $1.50; OR supplied for the price.

FANCY GOODS AND STATIONERY.

No. 133.—Cera Painting.—(Entirely New.) A New—Beautiful Art.—Price $1.00.—Cera Painting is a name given a simple method of coloring; the paints are made of the finest French colors. Instead of being prepared to use with the brush as with oil and water colors, they are combined with a resinous product by a chemical process, and are elegantly encased in pencil form, for convenience in application. They are permanent colors, do not fade or discolor, and are prepared to supply a means of simple and rapid coloring in flat tints, now so popular. A set of colors, with full set of transfer materials, by which all pictures drawn are preserved for future use, also six original designs in figures for coloring. Full printed instructions, which will enable any one to use them, are sent, post-paid, to any one who will collect and forward to us **2** subscriptions at $1.50 each; OR will be supplied, post-paid, for the price.

No. 134.—Canvas Portfolio.—Latest Pattern. Price $2.00. This genteel and useful Premium is made of canvas, size, 4½ by 7; bound with Russia leather, beautifully hand-painted on Cover, with satin corners, having spaces inside for envelopes, paper, stamps, etc. **Presented,** post-paid, for **3** subscriptions at $1.50 each; OR we will supply it, post-paid, for the price.

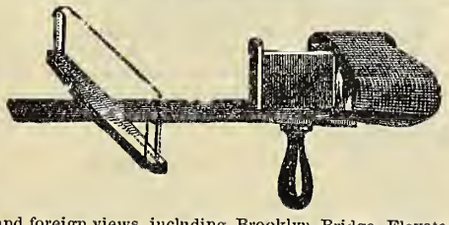
No. 135.—Glass Paper Weight.—Something entirely new.—Price $1.50.—Made from ground glass, representing an egg on an ornamental slab. Handsomely hand-painted. An exquisite Holiday Gift for either a lady or gentleman. **Presented** for **2** subscriptions at $1.50 each; OR we will send it, post-paid, for the price.

No. 136.—Horn Paper Cutter.—Price $1.00.—An entirely new idea in the line, made from colored horn, 9 inches long, with handle made from squirrel skin. A neat birthday or holiday gift. **2** subscribers at $1.50 each will secure this, post-paid; OR we will send it, post-paid, for the price.

No. 137.—Smoked Pearl Card Case.—Price $2.00.—Size, 4 by 2¾. Very handsome present for a lady friend, and a really beautiful as well as useful article. Given for **3** subscribers at $1.50 each, post-paid; OR mailed for the price.

No. 138.—Photograph Album.—Price $2.75.—Size, 8½ by 10½ inches. Leatherette, embossed Cover, roses and buds in colors, with gold stem and silver leaves. Will hold 99 Pictures, card and cabinet size. Given for **3** subscriptions at $1.50 each; OR supplied for the price. Receiver to pay express charges in either case. New and unique pattern.

No. 139.—Stereoscope and 6 Views.—Price $2.50.—A fine Stereoscope and six popular home

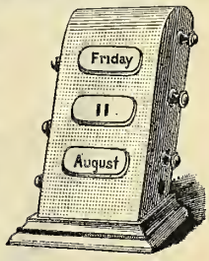


and foreign views, including Brooklyn Bridge, Elevated Rail Road, Public Buildings and Thoroughfares. This Stereoscope is of the best quality, with Hood of satin wood and black walnut frame, with excellent glasses. We will send one for **3** subscriptions at $1.50 each; OR supply it for the price. Expressage in either case to be paid by the receiver.

140.—Box of Stationery.—Price $1.00.—This new and handsome papetrie contains 24 sheets of the best cream laid octavo note and 24 envelopes to match, all elegantly stamped in four different colors of bronze, put up in a new patent folding box. **2** subscriptions at $1.50 each, will secure this, post-paid; OR we will send it, post-paid, on receipt of price.

No. 141.—Autograph Album.—Price $1.50.—Size, 5 by 8 inches. Highly decorated, embossed Cover, floral border, and eight kinds of different colored plumage. Tinted paper. Seven beautiful, highly-colored full-page Lithographs, the Golden Butterfly, and many other species, with flowers and foliage. The newest and prettiest Album to be found. Sent, post-paid, to any one forwarding us **2** subscriptions at $1.50 each; OR supplied for the price.

No. 142.—Nickel Plated Calendar.—Something entirely new. Price $2.00.—This elegant and useful Premium stands 5 in. high, handsomely nickel plated, tells day, week, month, and year; good for any number of years. Makes appropriate Holiday Gift for parents, brothers, or sisters. **Presented** for **3** subscriptions at $1.50 each; OR supplied, post-paid, for the price.



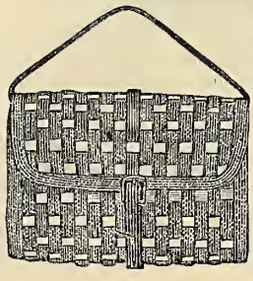
No. 143.—Portable Pocket Inkstand.—Price $1.25.—Closing Pocket Inkstand. The Glass Ink-holder is cased in brass, and this covered with Russia leather. Double spring top. Sent, post-paid, for **2** subscriptions at $1.50 each; OR mailed, post-paid, by us for the price.

No. 144.—Lady's Pocket Book.—Price $1.00.—Elegant latest design, lined with soft Red Leather. The center opens inside, and is designed for specie, bills, or dress samples. The Handle is Nickel-plated, and firmly fastened, making a beautiful Portmonnaie for any Lady. **Presented** to any one for **2** new subscriptions at $1.50 each; OR sent, post-paid, on receipt of the price.

No. 145.—Lady's Portmonnaie.—Price $1.00. Alligator skin; handsomely finished; four compartments; with large center for coins, etc., nickel-plated clasp, handle, etc. we cannot recommend this Premium too highly. **Presented,** post-paid, to any one, for **2** new subscribers at $1.50 each; OR we will supply it for the price, post-paid. Newest pattern.

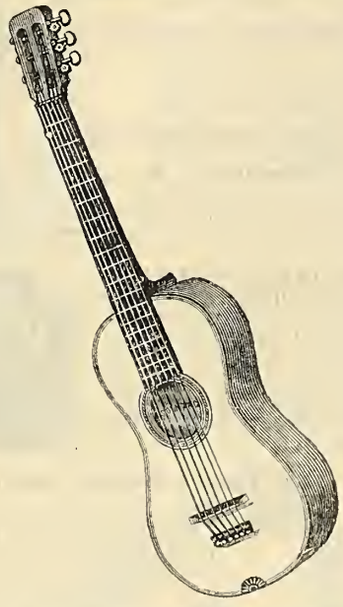
No. 146.—Lunch Basket.—Price 50 cents.—Made from plaited Straw, with Double Leather Straps and Handle. The neatest little Lunch Basket out. Presented, post-paid, to any present subscriber who will forward **1** new subscription at $1.50; OR sent, post-paid, on receipt of price, 50 cents.

No. 147.—Shopping or School-Bag.—Price 50 cents.—This is a New and Handsome Bag, made from braided Straw, with Leather Trimmings, Straps and Handle; useful to Ladies while Shopping, or can be used by the Children as a School-Bag. Presented, post-paid, to any present subscriber who will forward **1** new subscription at $1.50; OR we will supply it for the price, post-paid.



MUSICAL INSTRUMENTS. USEFUL AND ENTERTAINING TOYS AND GAMES.—LATEST DESIGNS.

No. 148.—Guitar.—Price $6.00.—This special instrument has been selected by us as a Premium for those who are musically inclined, and those who wish to



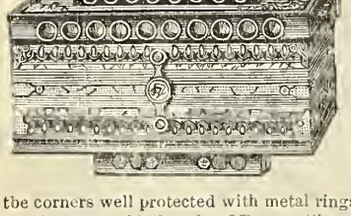
learn, also for advanced players. We will furnish this handsome instrument for **8** subscriptions at $1.50 each; OR supply it for the price. Receiver to pay expressage in either case, which is small.

No. 149.—Concertina.—Price $3.50.—This new design Musical Instrument is one of the finest we have ever offered, and is well worth the small amount of time it will take to make up a club to secure it. We will **Present** it post-paid for **4** subscriptions at $1.50 each; OR will supply it, post-paid, for the price.

No. 150.—German Harmonica.—Price $1.50. Manufactured of black wood, polished, nickel

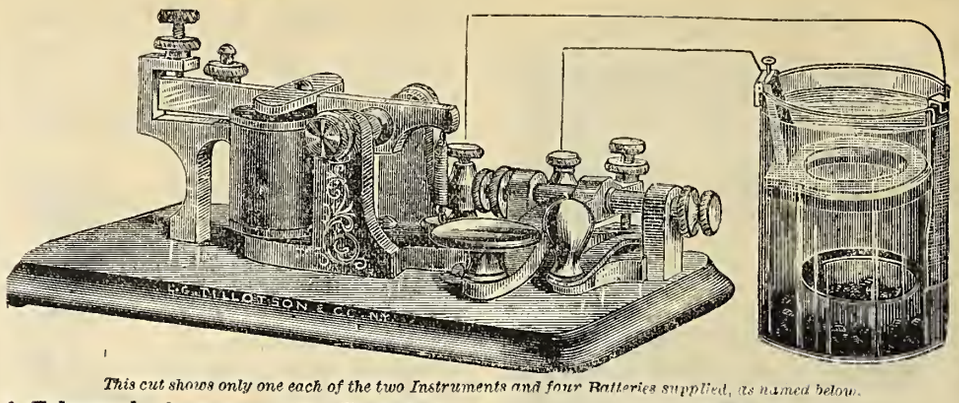
plated; 48 notes and tremolo.—**2** subscriptions at $1.50 each will procure this, post-paid; OR we will supply it, post-paid, for the price.

No. 151.—Accordeon.—Price $5.00. Superior and beautiful popular instrument, containing double bellows, with two sets of excellent reeds, key cover, and



having the corners well protected with metal rings. Sent for **7** subscriptions at $1.50 each; OR we will supply it for the price. Receiver in either case to pay expressage.

No. 152.—The Travers Patent Hammocks.—Price $1.50, and $3.00.—These justly celebrated Hammocks are made of the Best Twine and are very durable. We will give one of the $1.50 hammocks, post-paid, to any one who will send us **2** subscriptions at $1.50 each, or one, price $3.00, for **4** subscribers at $1.50 each; OR we will supply either of the above, post-paid, for the price.



This cut shows only one each of the two Instruments and four Batteries supplied, as named below.

A Telegraph Apparatus for Everybody.

What Five Boys Do.

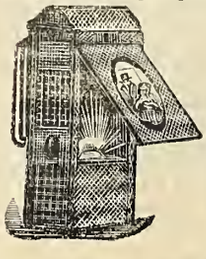
Five Boys or Young Men (12 to 19 years old), living within a mile or so of each other in a rural city, have a wire running around to each one's home. This is supported by brackets on trees and buildings, with a few poles where needed. Each has an instrument in his own room connected with the wire, and one compound battery in the cellar of the leader of the club supplies the electricity for all. These five lads (there might be twenty or more, including any number of Misses, using the same wire) converse with one another by telegraph whenever they choose, day or evening, thus having a pleasant entertainment, and at the same time becoming expert in telegraphy—a knowledge of which is daily growing in importance. The telegraphic language is easily learned, especially by the young, and it would be well for most young people to practically understand it. Shops, manufactories, business places, residences, distant buildings, etc., are easily and cheaply connected, at a great saving of time and leg weariness. One wire with an instrument at each end, and at as many intermediate points as desired, and one battery on the line, are the essentials.

153.—We have arranged to supply a very complete outfit for two stations, consisting of **Two Sets of Instruments,** including Batteries and Chemicals, with the 20-ohm fine wire helix for working up to 15 miles when desired. Our set includes *two* extra Batteries (enough to work ½ to ¾ mile); *six* Glass Insulators on Brackets to nail upon trees, buildings, or poles for carrying the wire; *two* Manuals giving full directions for putting up the apparatus and learning and using.—The wire needed can be obtained anywhere. Extra Instruments and Manuals for additional stations and persons, and extra Batteries for greater distance than ¾ mile, can be supplied at half the cost of the first double set.—The double set (for two persons), that is, 2 superior Instruments, 4 Batteries, 6 Insulators and 2 Manuals, we will supply for $12; OR **Present** them for **15** subscriptions at $1.50 each—Boxed free; receiver to pay expressage.

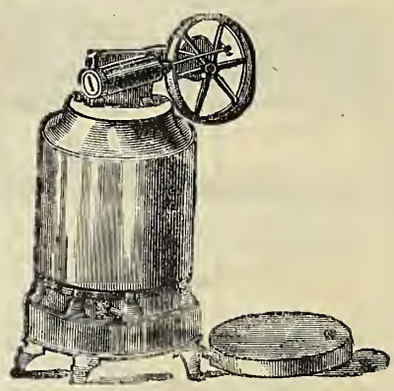
No. 154.—Daisy Printing Press.—Price $2.00.—One of the very best Presses made, a very popular Premium; it is manufactured of Malleable Iron, Japanned in black, and ornamented, and contains the necessary outfit, with full directions for Amateurs. Just the Press for the Boys. Given for **3** subscribers at $1.50 each; OR sent for the price. Receiver to pay expressage in either case.

No. 155.—The Silent Teacher.—Price $1.00.—A Boy or Girl can sit quietly but with great delight and interest while this Sectional Map of the United States is put together. Packed in a box. **Presented** for **2** subscriptions at $1.50 each; OR supplied for the price named, post-paid.

No. 156.—Student's Companion.—Price $1.00.—For School Children. Contains Ink Bottle, Sponge, Pencil, Rubber, Knife, Slate and Lead Pencil, all inclosed in a nice case, with Lock and Key. **Presented** for **2** subscriptions at $1.50 each; OR supplied for the price. Sent post-paid.



No. 157.—Novelty Lantern.—Price $1.00. A firmly made, handsomely finished, portable lantern. Constructed so as to produce a very bright light. Sent, post-paid, for **2** subscriptions at $1.50 each; OR we will supply it for the price.

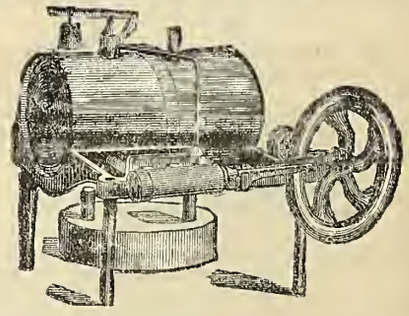


No. 158.—Eclipse Steam Engine.—Price $1.00.—It is of sufficient power to run model or toy machinery. Boiler of Brass, with Lamp, and two speeds to belt pulley. Hight, 4½ inches. **Presented** for **2** subscriptions at $1.50 each; OR supplied for the price. Sent post-paid.

No. 159.—Bonanza Printing Press.—Price $3.00.—For business or pleasure, old or young. Made of Malleable Iron, japanned in black, ornamented with red and gold stripes. The outfit consists of Press, one Composing Pallet, one two-inch Composition Roller, one box Wade's Ink, one set Spacing Reglets, one Pack White Bristol Cards, and a full 2A 3a font of Fancy Card Type, including Spaces and Quads, which will print a name or one line of type.

The whole packed in a wooden box, with sliding cover, with full directions, How to Print and Set Type. With this Printing Press you can print your own Cards, Labels, etc. **4** subscriptions at $1.50 each will secure this; OR we will supply it for $3. Expressage to be paid by recipient.

No. 160.—Field Glass.—Price $16.—The Object Lens of this Glass is 26 lines, and will magnify objects clearly at long distances. It is Mounted in Jet, inclosed in Leather Case. It is the best we have seen for this price. **21** subscribers at $1.50 each secures this; OR we will supply it for the price. Mailed, post-paid.



No. 161.—Horizontal Engine.—Price $2.50.—This little Engine has a Brass Boiler and Safety Valve, Brass Pipe connecting Boiler with Steam Chest, one-inch stroke, cross-head running on steel ways. Length 6 inches; hight, 4½ inches. All packed in a box, with Lamp, Funnel, etc.—Presented for **4** subscriptions at $1.50 each; OR supplied for the price. Sent post-paid.

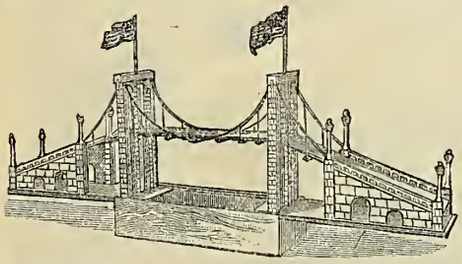
The Telegraph Apparatus is a most popular and entertaining Premium.

No. 162.—Three Premiums in One.—Price 75 cents.—Just the things for School Boys or School Girls. 1st. Black Slate, covered frame.—2d. *Scholar's Companion*, a Tin Box, containing Pen-Holder, Lead Pencil, Slate Pencil, and Rubber, Sponge, and Chalk Crayon. — 3d. *Hemp-Knitted School Bag*, strong and durable; length, 14 inches; depth, 11 inches. **1** *new* subscription at $1.50, if sent by a subscriber himself, will secure all these; OR we will supply the three for the price, post-paid. This was a popular Premium last year, and is consequently again offered for 1883.

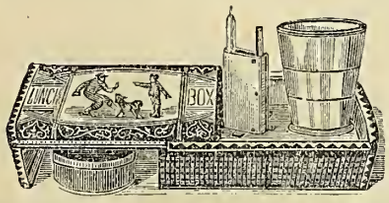
No. 163.—Magic Lantern for Boys.—Price $1.50.—All ready for use. Lamp, Lenses, and 1 dozen Views. A splendid Toy for winter evenings, affording no end of amusement. Given for **2** subscriptions at $1.50 each; OR supplied for the price, post-paid.

No. 164.—Vignette Authors.—Price 60 cents. These Cards are finely ornamented, and each one of the 72 bears a handsomely engraved portrait of an author, his name, and three of his works. Given to any present subscriber sending us **1** *new* subscriber at $1.50; OR we will supply it for the price, post-paid.

No. 165.—Parlor Roller Skates.—Price $2.00.—With Black Leather Trimming, broad Toe and Heel Straps, adjustable Instep Strap, Patent Buckle, and made of Polished Beech Wood. **4** subscriptions at $1.50 each will secure these; OR we will supply them for the price. Sent by mail, post-paid, in either case. Send size of shoe worn.

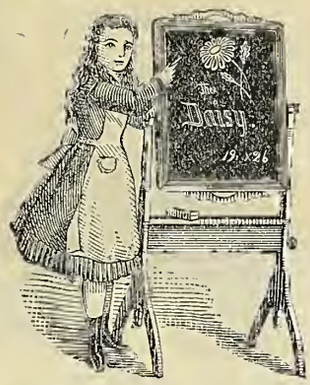


No. 166.—The Great East River Suspension Bridge.—Price $1.75. A New and Interesting Toy, it is easily set up, the box forming the base of the Bridge, the cover and the top of the box being so arranged that they form the base of the approaches. It is a Model of the Bridge between New York City and Brooklyn. **2** subscriptions at $1.50 each, will obtain this article, post-paid: OR we supply it, post-paid, for the price.

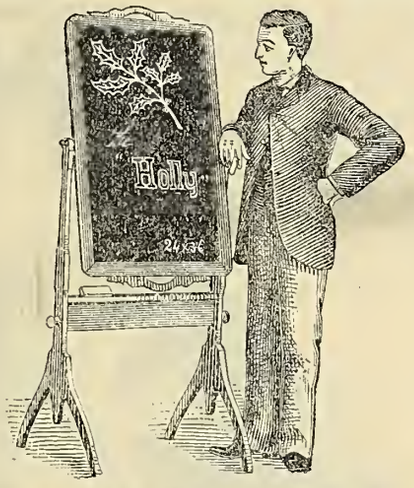


No. 167.—Three Premiums in One.—Price 75 cts.—Useful and attractive.—1st. Ornamental Tin Lunch Box, length 7 inches, width 4 inches, depth 2½ inches.—2d. Metal Folding Drinking Cup, which folds up, and packs in a small tin box.—3d. Farrell's Combination Match Box, nickel-plated, with Candlestick and Candle. Supplied to any present subscriber who sends us **1** *new* subscription at $1.50; OR for the price named.

No. 168.—Combination Doll-House.—Price $1.75. The largest and most practicable Doll-house ever offered. It is packed in a neat wooden box, which forms the foundation, and the cover of the house. All windows and doors are made to open and shut. Size of box, 18 by 9½ inches. This will be sent, post-paid, for **3** subscriptions at $1.50 each; OR we will supply it for the price, post-paid.



No. 169.—Home Blackboards.—The Daisy.—Just out. Price $3.00. Is a revolving Blackboard, 19 by 26 inches. Extreme hight, 4 feet. Oil finished frame, it is quickly adjusted to any angle, and is easily taken apart or put together in one minute without any tools of any kind, and is furnished with set of Drawing Cards, Rubbers, and Crayons. It will be given for **3** subscriptions at $1.50 each; OR will be supplied for the price, receiver to pay expressage. Something new.



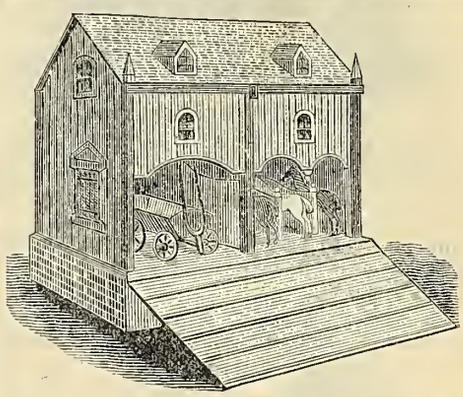
No. 170.—The Holly.—Price $4.50. Same as above in every respect except the size, which is 24 by 36 inches. Extreme hight, 5 feet 4 inches. Given for **5** subscriptions at $1.50 each; OR supplied for the price, receiver to pay expressage. A new model.

No. 171.—The Young Artist Blackboard and Easel Combined.—Price $2.25. This Blackboard and Easel is accompanied with a set of nine new pictures, printed upon stiff cards, to be placed in a groove at the top of the board for drawing. It is reversible, and can be used on both sides, can be closed up, and put away in a very small space. Chamois Rubber, and five Dustless Crayons are given with this board. Given for **3** subscribers at $1.50 each; OR supplied for the price, receiver to pay expressage in either case. This is something entirely new.

No. 172.—One Pair Skates.—Price $2.50. This style is all clamp, with polished blades, bined top, steel sole, and heel plates, double-acting heel and toe

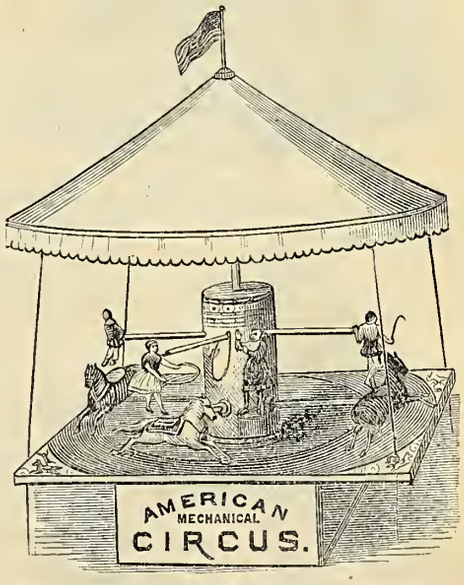
clamps. **4** subscriptions at $1.50 each, will secure these; OR we will supply them for $2.50. Receiver to pay expressage. Length 8 inches to 11 inches. Send length desired.

No. 173.—Combination Stable.—New Toy. Price $1.25. A large and handsome Boy's Toy, furnished with 3 Horses and Wagon, etc., etc., packed in

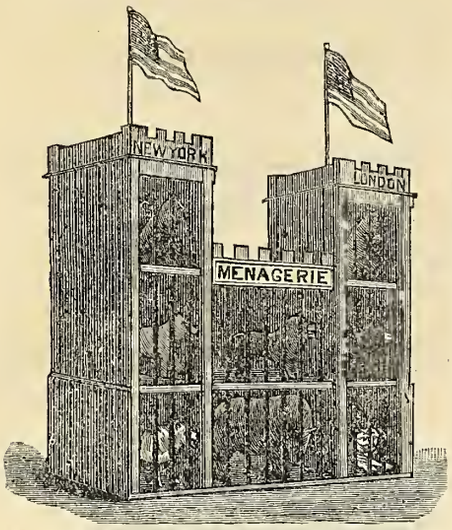


a neat wood box, which forms the foundation of the stable. Sent, post-paid, for **2** subscriptions at $1.50 each; OR will be mailed, post-paid, for the price.

No. 174.—Bull Dog Bank.—Price $1.50. Learn the Children to Save the Pennies. They can place the penny on the Dog's nose, then pull his tail, and he will throw the penny into the air, catch it in his mouth, and swallow it. A very unique contrivance. Sent for **2** subscribers at $1.50 each, post-paid; OR we will supply it for the price.

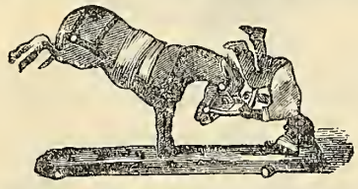


No. 175.—Great American Circus.—Price $1.50.—A very handsome Toy, just brought out. Has regular Circus Tent and Guy Ropes, Horses running and Riders Performing. The Box is the base of the Circus and Ring. It will be **Presented,** post-paid, for **2** subscriptions at $1.50 each; OR sent, post-paid, on receipt of the price.



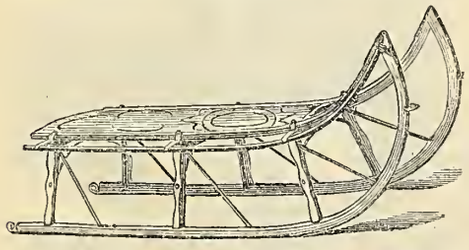
No. 176.—The Great New York and London Menagerie.—Price $1.50. A large and handsome Boy's Toy, just brought out, containing Eight Colored Animals, including *Jumbo*. It is packed in a strong Box, which forms the lower part of the Cage. Given, post-paid, for **2** subscriptions at $1.50 each; OR mailed for the price.

No. 177.—Kicking Mule Bank.—Price $1.50. By simply pressing on the spring, the Mule will kick his colored Brother over his head every time, and



the coin is thrown from the rider's mouth, into the place for it below. For **2** subscriptions at $1.50 each, post-paid; OR we will send it for the price.

No. 178.—Combination Grocery Store.—New Toy. Price $1.50. A large, well-finished, and fully furnished Store, complete stock of Groceries in Boxes, Cans, and Barrels, which gives the Store a bright business-like appearance. The Box forms the foundation of the Store. Given for **2** subscriptions at $1.50 each, post-paid; OR sent, post-paid, on receipt of price.



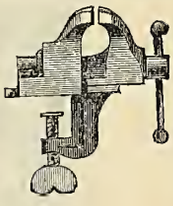
No. 179.—Sleigh.—Price $2.00.—Ornamented and varnished Oak Body, bright tin braced, arched Knees, and polished Runners. Length, 33 inches; width, 12 inches. Many a boy can secure this handsome sleigh. **3** subscriptions, at $1.50 each, will secure this premium; OR we will supply it for the price. Expressage to be paid by recipient.

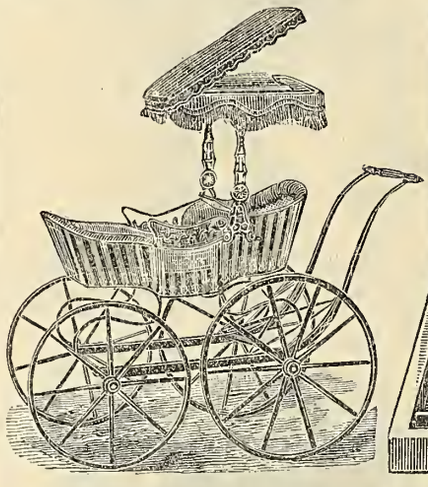
No. 180.—Boy's Star Line Wagon.—Price $5.00.—This pleases the small boys. It has an iron axle, heavy round tire wheels, and is painted and ornamented, and also has hub caps and seat, with 28-inch body. This will make an admirable present from parents

to their sons. Supplied for **7** subscriptions at $1.50 each; OR for the price named. Receiver to pay expressage.

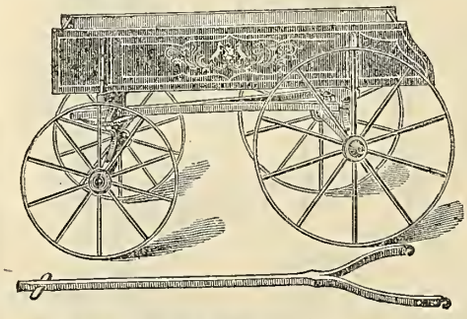
No. 181.—Spy Class, (16 Lines).—Price $9.00.—Very large, powerful, and satisfactory. Cased in brass, corded, and has sun or storm shade. Length, when drawn out, 37 inches. **12** subscriptions at $1.50 each will secure this; OR we will send it for the price. Receiver to pay expressage.

No. 182.—Slide Vise.—Price $2.00.—(Always handy.)—Iron, faced with Steel, and has a Clamp by which it can be attached to a table, and can be removed by turning a thumb screw. Width of Jaw, 1¼ in. For **3** subscriptions at $1.50 each we will present this Slide Vise; OR we will supply one of them for $2. Sent by mail, prepaid, in either case. A popular and useful Premium.



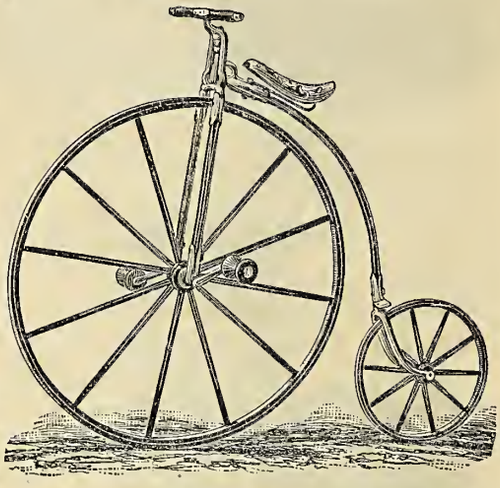


No. 183.—Perambulator.—Price $13.50.—It is upholstered all around on the inside in all wool reps, furnished with curtains, hub caps, handle tips, hand rail, patent valise top, etc. Supplied for **17** subscriptions at $1.50 each; OR furnished for the price. Receiver to pay expressage. We will furnish it with Slat or Wicker Body as desired.

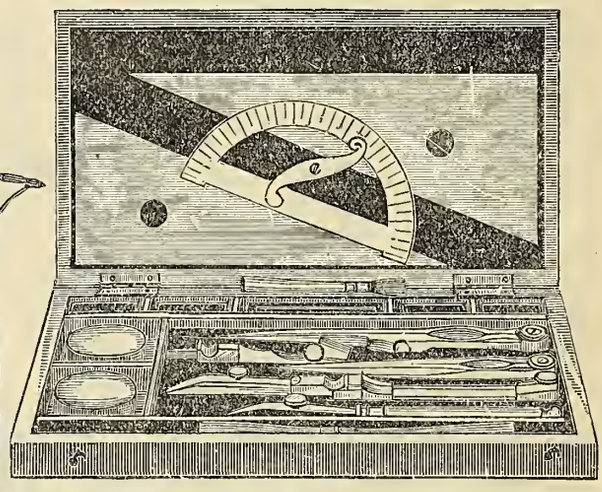


No. 184.—Boy's Wagon.—Price $8.00.—Boys between the ages of 6 and 16 years, will find this stylish vehicle just the thing. It will carry four to five hundred pounds on a level road. Wheels and spindles are of iron, body is 2 ft. 8 in. long, 1 foot 3 in. wide, and 5 in. deep. Finely painted, and a first class wagon. Supplied for **10** subscriptions at $1.50 each; OR sent on receipt of price. Receiver to pay freight from factory in either case.

No. 185.—Doll Perambulator.—Price $1.50.—It has a Willow body, attractively lined, with Parasol Canopy, well mounted, the wheels 6 by 8 inches in diameter. **2** subscriptions at $1.50 each will secure it; OR supplied for the price. Receiver to pay expressage.



No. 186.—Boy's Bicycle.—Price $6.00.—Just right for a boy from 10 to 14 years old. Strongly made, with tinned iron frame and seat, shaved spoke wheels, with 32-inch front wheel. We will present this for **7** subscriptions at $1.50 each; OR supply it for the price. Receiver to pay expressage.



Drawing Instruments ("Mathematical") are always handy—and develop skill in Boys and Girls which will be useful in all after life. We select five kinds:

No. 187.—Extra quality; 12 pieces; nickel-plated. Rosewood Box, Velvet lined; supplied, post-paid, for $5.00; OR **Presented,** post-paid, for **7** subscriptions at $1.50 each.

No. 188.—Good quality; brass and steel; 14 pieces, including brush and paints. Supplied, post-paid, for $2.60; OR **Presented,** post-paid, for **5** subscriptions at $1.50 each.

No. 189.—Stained Wood Box; 9 pieces. Supplied, post-paid, for $1.80; OR **Presented,** post-paid, for **3** subscriptions at $1.50 each.

No. 190.—Leather case, specially for pocket; extra quality; 11 pieces, nickel-plated. Supplied, post-paid, for $4.50; OR **Presented,** post-paid, for **7** subscriptions at $1.50 each.

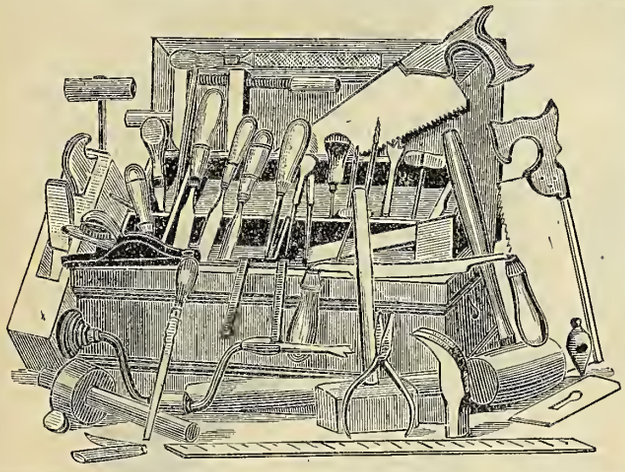
No. 191.—Leather Case, for pocket, etc. Supplied, post-paid, for $3.00; OR **Presented** for **5** subscriptions at $1.50 each, post-paid.

No. 192.—Marking Ink and Pen (*Briggs' Patent*).—Price 75c. This useful article we have used for years with thorough satisfaction. It consists of a bottle of Indelible Ink, a fine pointed Glass Pen for marking—all safely packed in a neat case. Any present subscriber sending us **1** new subscription at $1.50 will secure this, post-paid; OR we will supply it, post-paid, for the price.

An Excellent Thing for Boys.

TOOL CHESTS.

Next to educating his mind, and helpful for that, is the helping a boy to be "HANDY with his HANDS." The Boy and Man goes through life always handicapped, if he must run to a mechanic for every little and large repair and fixing, on the farm, in the house, in the store, anywhere. Give the Boy a few TOOLS to work with, and he will develop a wonderful amount of skill, ingenuity, tact, and inventive power, that will do him excellent service *all through life.* A Ten-Dollar CHEST of Tools, costing less than a dollar a year for interest and wear, will do him far more good in after life, than to lay by for him a Thousand Dollars in the Savings-Bank.—To help in this way, we have selected a few TOOL CHESTS, containing a variety of Tools, and at a much lower price than the separate Tools would cost, even without the neat Chest to keep them in order. The largest assortment and the best quality of Tools are most desirable, but to meet the circumstances of all, we have provided several kinds, advising all to get the *best*—as many Tools as possible.



N. B.—The prices we offer are **10** to **20** per cent *below* the Manufacturers' published lists and established rates by the dozen.—The CHESTS are Ash or Chestnut, neatly varnished to show the grain, with Walnut Mouldings, and Bronzed lifting Handles, and have large Tray, compartments for Tools, etc. They will be delivered at the Office or to any Express Co. free.—Receiver to pay express carriage.

193.—Tool Chest—"A."—Size, 20¼ inches long, 12 inches wide, 7 inches deep. Contains 51 assorted Tools, etc.; ALSO Bracket Saw Outfit (see list below). Price $12, but we will supply it to our readers for $10; OR **Present** it for **11** subscriptions at $1.50 each.

194.—Tool Chest—"B."—Size, 18½ by 10½ by 7½ inches; finished like "A." Contains 45 assorted Tools, and Bracket Saw outfit. Price $10. We will supply one for $9; OR **Present** it for **10** subscriptions at $1.50 each.

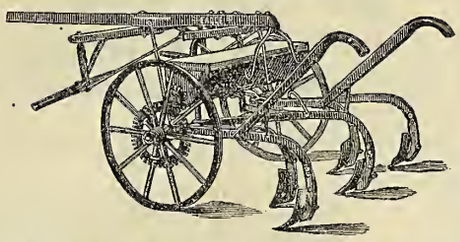
195.—Tool Chest—"C."—Same size and finish as "B."—Contains 31 assorted Tools, with Bracket Saw outfit. Price $7. We will supply one for $5; OR **Present** one for **7** subscriptions at $1.50 each.

196.—Tool Chest—"D."—Size, 17½ by 10 by 7 inches; finished like "A." Contains 30 assorted Tools. Price $5. We will supply one for $4.50; OR **Present** one for **6** subscriptions at $1.50 each.

197.—Tool Chest—"E."—Size, 16½ by 9 by 6 inches; finished similar to the others. Contains 27 assorted Tools and articles. Price $3. We will supply one for $2.70; OR **Present** one for **4** subscriptions at $1.50 each.

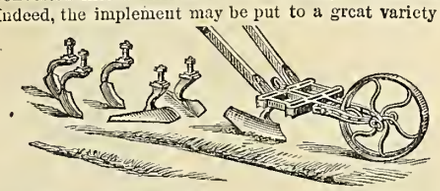
What the Tool Chests Contain.—No. 193, ("A,") has the following articles: Hand Saw; Compass Saw; Nail Hammer; Hatchet; Mallet; Bench Vise; Hand Screw; Iron Square; Trying Square, and Drawing Square; Angle Square; Marking Gauge; 2-foot Boxwood Rule; Spirit Level; Straight Edge; Mitre Box; Pair Compasses; Chalk Line and Reel; Scratch Awl; Cast Steel Screw Driver; Firmer Chisel and Gouge, both with Handles; Carpenter's Brace Bit Stock, and 2 Steel Bits to fit; Flat and Saw Files, Handled; 4 Cast Steel Nail and Spike Gimlets; 2 Brad Awls, Handled; Steel Nail Punch; Carpenter's Templet; Metal Plumb Bob; Lead Pencil, etc.; ALSO Sportsman's Knife, containing 6 implements (this Knife is also in "B"; ALSO, Fine Bracket Saw outfit (Saw in Steel Frame), with 2 Saws, Awl, and 25 Ornamental Designs. This is also in Chests "B" and "C." The five Chests contain similar Tools, etc., in number, as noted. Any Boy will be "Rich" with Chest "A," well off with "B," and well-to-do with "C," or even "D" or "E."

FARM IMPLEMENTS.

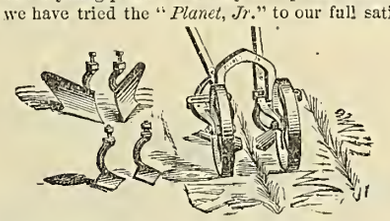


No. 198.—"Eagle Combined Riding and Walking Cultivator."—Price $35.00.—The Eagle Cultivator in several forms, with iron and wooden parts, has long been in successful use. It is now supplied with a RIDING SEAT, which saves the worker's strength, and is so placed as to enable him to see the whole work, and even Boys can manage it. If the team force be weak, or one wishes to walk occasionally for other reasons, the Seat is quickly turned forward out of the way.—The shovels can be adjusted to any desired position, can be moved or raised by the handles, and also by foot levers, leaving the hands free to guide the team.—It has also a jointed or *Pivot Tongue,* enabling one to dodge crooked rows of corn, or any obstacles. We can supply one complete for $35; OR we will **Present** one for **35** subscriptions at $1.50 each; or we will supply one for $35, and deduct $1 from the price of the implement for each subscription sent us at $1.50 a year, if there be *ten* or more subscriptions.

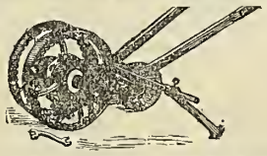
No. 199.—"Planet, Jr."—Price $14.00.—This implement is not only a SEED DRILL, and would be worth its cost for sowing seeds only, but it is readily converted into a HAND CULTIVATOR, or wheel hoe. Indeed, the implement may be put to a great variety of



uses, for which we must refer to the descriptive circular of the makers. For the sowing of seeds and the cultivation of the young plants after they are up and need weeding, we have tried the "*Planet, Jr.*" to our full satisfac-



tion. Its utility may be extended to *farm* crops, and in the sowing and early cultivation of the Root Crops, it will prove of great value. Indeed, the general tendency of farming where there are near-by markets, is towards the

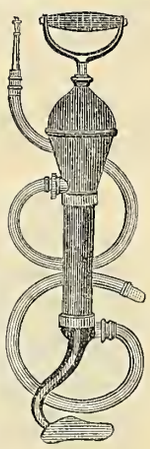


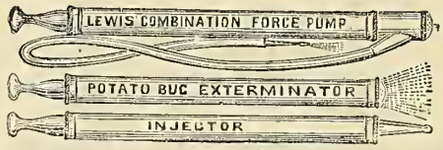
methods of gardening, and this calls for gardening implements. We supply Planet, Jr., for $14; OR **Present** it for **15** subscriptions at $1.50 each. Freight to be paid by recipient.

No. 200.—The New Blanchard Churn.—Price $8.00.—One of the best and most popular Churns. The action of the dasher is such as to cause agitation of the cream by creating currents, and not by beating or friction of the cream. Four motions are given to the cream by one revolution of the crank. A *reverse* motion of the dasher gives a cam pressure to the butter by which the butter-milk may be worked out, and the salt worked in, without removing the dasher. Ease of cleaning, the form of construction exposes the inside without any inaccessible or invisible angles or corners. For **9** subscriptions at $1.50 each we will give one of these excellent churns; OR supply one for $8.00. The receiver to pay freight in either case.

No. 201.—Whitman's Fountain Pump.—Price $8.50.—Made of brass, handsomely finished, with Sprinkler and Rubber Hose attached. Many thousand dollars worth of property have been saved from fire with the help of the Fountain Pump, and Trees, Vines, etc., innumerable, from Insects and Drouth. It is easily carried, (weighing less than four pounds), and can be used by even a child. Only **14** subscriptions at $1.50 each are needed to obtain this Pump; OR we will supply one for $8.50. The Carriage to be paid by receiver.

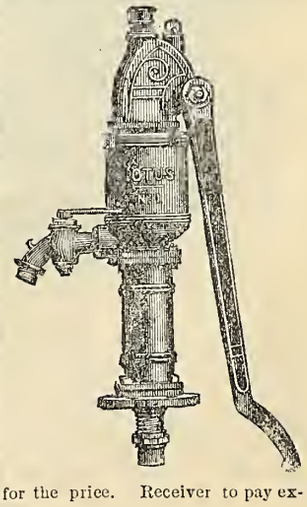
No. 202.—A Greenhouse Pump.—Price $9.00.—A good force pump is an essential part of the outfit of a greenhouse, not only for ordinary watering, but for showering to keep down insects, and for maintaining the needed moisture of the atmosphere. It is not always convenient to have a stationary pump, and a portable one is often preferable. The one here offered can be used anywhere. It is a complete engine in itself, having a suction or supply hose, which will take the water from a cistern or a bucket, and a delivery pipe to be terminated by a nozzle for ordinary watering, or by a sprinkler. The pump being held in place by means of the foot, it is operated with one hand, while the stream is directed by the other. Given for **8** subscribers at $1.50 each; OR supplied for the price. Receiver to pay expressage in either case.



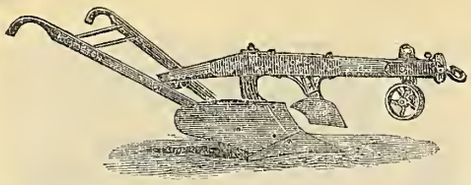


No. 203.—Lewis' Combination Force Pump.—Price $6.00.—Makes three machines, as shown in the engravings. Can be converted into an Injector, or an Insect or Bug Exterminator at short notice. It is made of Brass, with three feet of Hose, and will throw a good sized stream of water. **7** subscriptions at $1.50 each, secures this; OR we will supply it for $6.00. Receiver to pay freight.

No. 204—W. S. Blunt's Improved Universal Force Pump.—Price $20.50.—Made of Iron, it has a working head with an upper nozzle, which is intended to be used with hose, or for pipe leading to a tank. A side spout is screwed into the air chamber for the attachment of hose, for use in fires or irrigation. It has also a stop cock in the spout, a great convenience when forcing water through the upper nozzle. **23** subscriptions at $1.50 each will secure this; OR we will supply it for the price. Receiver to pay expressage in either case.



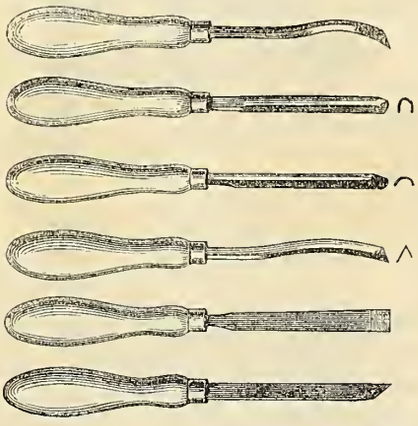
There is no better Holiday Gift than a Chest of Tools.



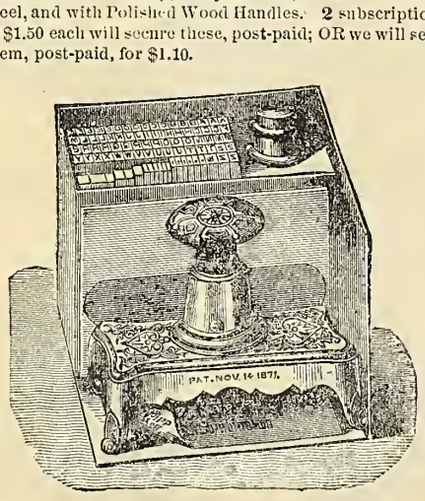
No. 205.—New Remington Carbon Clipper.
Price $14.00.

The manufacturers of plows are now working in the direction of lightness of draft, and durability of material. The makers of the Clipper Plow claim to have fixed upon a metal, which allows them to make the plow much lighter than those made with chilled iron. They call it the "Carbon Metal," and it consists of equal parts of refined iron and cast-steel. This metal, upon a fractured surface, presents the appearance of silver-steel, and it takes a fine polish equal to the best steel. These plows are furnished with the new Jointer, which does the work of a coulter. This is intended to throw all stubble into the furrow, and to completely turn under sod or weeds. It has a steel mould-board, and makes the plow much lighter to handle. The makers have so much confidence in their new Jointer, that they allow every purchaser of a plow to take a Jointer home and try it, and to return it if not found satisfactory. They say none are returned. We will give one of these plows to any one who will send us **15** subscribers at $1.50 each; OR we will send it for the price. Receiver to pay freight.

No. 206.—The A. B. C. Corn Sheller With Fan.—Price $12. Made of the best wood and iron, by a standard manufacturing house, and is guaranteed to give satisfaction. No farmer should omit this opportunity of securing this useful machine. **13** subscriptions at $1.50 each will secure this present; OR we will supply it for the price, receiver to pay freight in either case.



No. 207.—Carving Tools.—Price $1.10.—These tools are sharp, ready for use, made of the Best Steel, and with Polished Wood Handles. **2** subscriptions at $1.50 each will secure these, post-paid; OR we will send them, post-paid, for $1.10.



No. 211.—Triumph Combination Linen Marker.—Price $1.00.—Very valuable for every household. Each box contains a Silver-plated Linen Marker, a Bottle of Indelible Ink, Pad, Nippers, and three complete sets of Type, with Periods, Spaces, etc., etc. It can also be used for printing cards. **2** subscriptions at $1.50 each will secure this invaluable article; OR we will supply it for the price, post-paid in either case.

CLOTHING BOTH TO ORDER AND READY MADE.

Wanamaker will "SUIT" You.

Your Choice as Follows:

No. 203.—A Good Overcoat, or Business Suit at $15.00.

No. 209.—A Good Suit to Order, or A Good Suit Ready-made, or A Good Overcoat, whichever you may select, at $20.00.

No. 210.—A Fine Worsted Suit at $35, or a $20 Overcoat with a $15 Suit, or a $20 Suit with a $15 Overcoat, whichever Combination you please, to equal the amount.

Here are Premium articles of great utility. WANAMAKER & BROWN'S goods are known everywhere for honest worth. We have arranged for a limited supply of their Clothing as Premiums, and will send to any of our Readers, securing either of them a sample packet containing a variety of styles to select from. There being an option in each of these Premiums, it is necessary to state which is preferred, that the samples may be sent to conform. The selection should be made and returned to us, and we will order the garments to be forwarded. No. 208.—A good $15.00 Winter Overcoat or Business Suit will be **Presented** to any one sending only **16** subscribers at $1.50 each. No. 209.—A good $20.00 Farmers' or Business Suit or Winter Overcoat for only **20** subscribers at $1.50 each. No. 210.—A good $35.00 Dress Suit, good enough for a wedding or any occasion, or a combination of either of the Overcoats or Suits of 208 or 209, equalling the same amount, for only **35** subscriptions at $1.50 each. The garments will be forwarded anywhere, by express or otherwise, as desired. Expressage to be paid by receiver. Here is an opportunity to get good clothes, with no expense, except the expressage, which amounts to but little. A few persons may unite and make up a club of subscribers, and secure a fine suit as a present to a Clergyman, or to any worthy person.

This Clothing, which, by special arrangement with the famous Philadelphia house above, is supplied us for Premiums, is *far better and cheaper* than any before offered as Premiums.

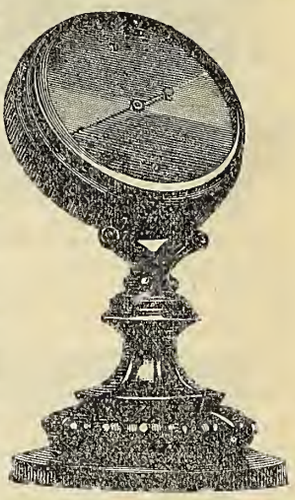
SENT FREE TO ANY ADDRESS.

Our beautifully illustrated, 32mo. Catalogue, containing descriptions of three hundred valuable books on Agriculture, Horticulture, Architecture, Field Sports, Horses, Cattle, Sheep, etc., etc., will be sent *free to any one forwarding by postal card his address to the Publishers*, and asking for it.

ORANGE JUDD CO., 751 Broadway, New York.

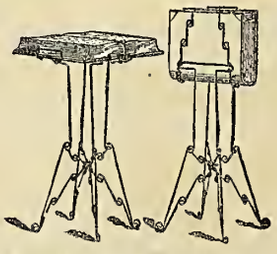
VALUABLE STAND OR POCKET THERMOMETER.

No. 212.—Auburndale Metallic Thermometer.—The principal action of this Thermometer is no new departure. It is simply the expansion and contraction of metals under changes of temperature. In the mercurial the temperature acts upon a single metal, while these derive their power from the difference in the contraction and expansion of two metals. It is the coming thermometer, and is surely destined, when its merits are known, to supersede all others, for the following reasons: 1st, its adaptability; 2d, its strength and durability; 3d, the ease with which it can be read, having a dial like a watch or clock; 4th, its ornamental appearance. It is an acknowledged fact that solid metals are more reliable than liquids; besides, the uncertainty of exhaustion and regularity in the tubes of mercurial thermometers make them unreliable, and the only reason why they are used, is the fact that people have, without any investigation on their part, adopted them as correct, rather than spent time to look into the matter. In a word, there is no subject of a scientific nature so little understood by the general public as thermometric observations. Fifty different thermometers, varying in price from 20 cents to $3.50, in the same immediate neighborhood will all be thoroughly relied upon, though they may vary from 5° to 10°. Were the same variation made in a watch or clock, the owners would at once ascertain the correct standard. We have thoroughly investigated this matter, and feel every confidence in offering them to our friends and patrons, knowing that they will find them all that is claimed for them. Watch-charm size, Rolled-gold Plate, size of 10-cent piece, we will present, post-paid, for **3** subscribers at $1.50 each; $3.00. Pocket size, 1¾ inches in diameter, for **2** subscribers, at $1.50 each; $2.00. Same with Bronze Stand, for sick room, or other use, $2.50, will be given for **3** subscribers, at $1.50 each; OR we will supply any of the above, post-paid, for the price.



No. 213.—Light Single Harness (Buggy).—Price $12.00.—A good Bridle, with Loop, Check, and Winkers, Flat Reins, a 2¼-inch Saddle, Turned or Plated Trimmings, Breast Collar, Breeching, and Traces regular made, 1 inch wide. All these are in this Harness. **Presented** for **15** subscriptions at $1.50 each; OR supplied for the price. Sent freight paid.

No. 214.—Whitman's Halter-Bridle.—Price $5.00.—These Bridles have become popular everywhere. They have been adopted by the U. S. Army as the Regulation Bridle. On receipt of **7** subscriptions at $1.50 each, we will forward one of these Bridles, post-paid; OR we will send one, post-paid, on receipt of the price,



No. 215.—Dictionary Holder.—Price $2.00. A handsome japanned stand, to hold any large volume, very light weight, but strong. Can be readily closed and put away when not in use. **3** subscriptions at $1.50 each, will procure this very desirable stand; OR we will supply it for the price. Receiver to pay expressage.

Heavy Gold-Plated Watch Chains, Rings, Charms, Bracelets, etc.

LATEST DESIGNS.

Gentlemen's Vest Chain.—Latest Pattern; of Heavy Gold Plate. These Chains will last for years, as they are of superior Workmanship, and strong and durable, of the best Quality, and made for us by one of the oldest and best known Houses in the country.

No. 216.—Price $4.00.—Will be sent, post-paid, for **4** subscriptions at $1.50 each.

No. 217.—Price $4.50.—This handsome Chain will be given for **5** subscriptions at $1.50 each, post-paid.

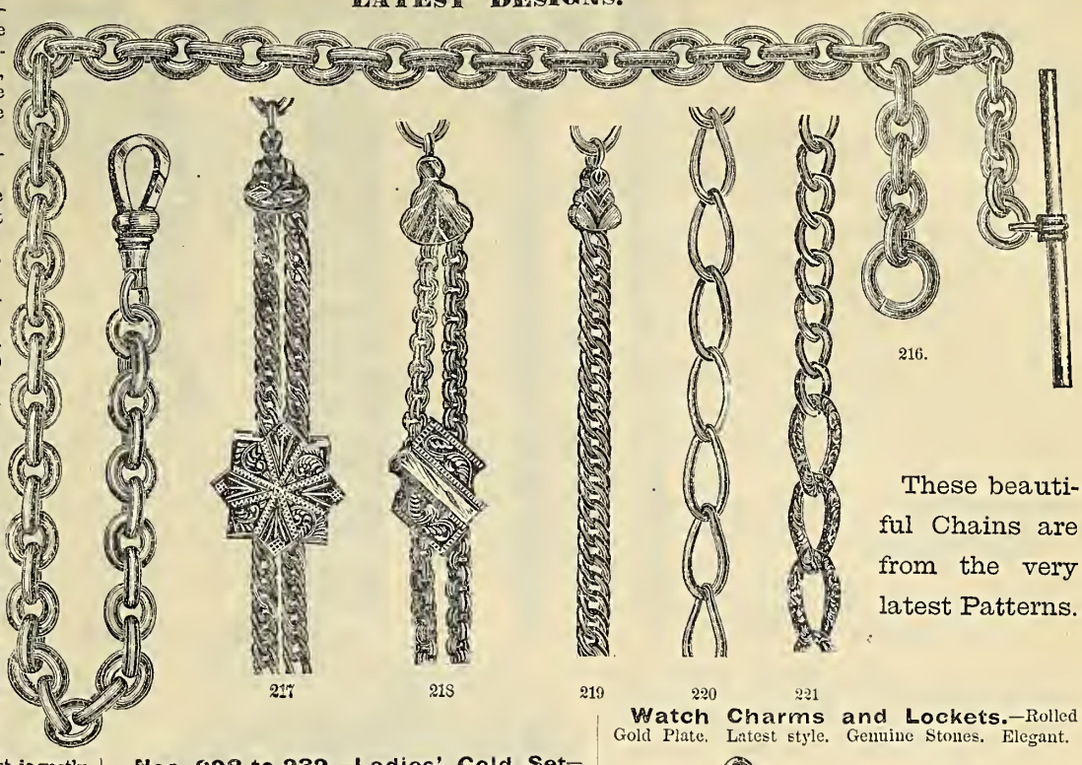
No. 218.—Price $4.50—Will be given for **5** subscriptions at $1.50 each, post-paid.

No. 219.—Price $4.00.—Will be sent, post-paid, for **4** subscriptions at $1.50 each.

No. 220.—Price $3.25.—This stylish Chain will be given for **3** subscriptions at $1.50 each, post-paid.

No. 221.—Price $4.00.—Will be sent, post-paid, for **4** subscriptions at $1.50 each.

Any of the above will be sent, post-paid, on receipt of the price.



216.

217 218 219 220 221

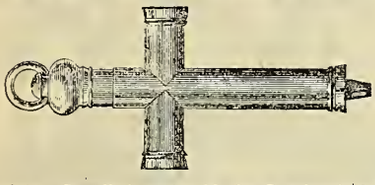
These beautiful Chains are from the very latest Patterns.

Nos. 222 and 223.—A Gold Thimble.—No. 222, price 62 cents.—No. 223, price $2.00.—There are some articles claimed to be made of the precious metals that would be nearly useless were they made entirely of silver or of gold. A gold thimble which is not *all* gold, is vastly better, even at the same price, than one made of the same metal throughout. In looking about for a really serviceable Gold Thimble, we came across the "Patent Graduated Filled Gold Thimbles." The makers claim that one of these thimbles will outlast two of those made entirely of gold, while the cost is vastly less; and from what we know of such matters, we do not doubt that experience will justify their claim. Each

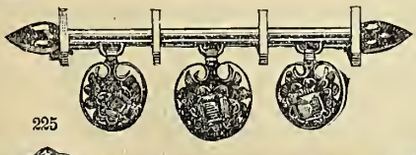
222 223

Thimble is put up in a velvet-lined Box. We will send one of these Thimbles, handsomely engraved, price $2.00, for **2** subscriptions at $1.50 each, or one of the plain kind, price 62 cents, to any present subscriber who will send us **1** new subscriber at $1.50. Post-paid in either case.

No. 224.—Watch Key (Cross Pattern.)—Price $1.50. This is an ornamental, as well as serviceable watch key. Self-adjusting, made of heavy rolled



gold plate. Supplied, post-paid, for **2** subscriptions at $1.50 each; OR we will send it, post-paid, for the price named.



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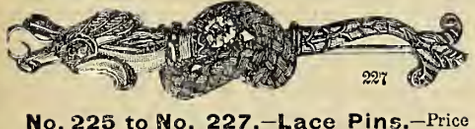


227

No. 225 to No. 227.—Lace Pins.—Price 75 cents each.—Three different styles. These "Pins" are all of New and Elegant Design, and are well worth the small amount of work necessary to secure one. One of these fine Lace Pins given, post-paid, to any subscriber who will send us **1** new subscription at $1.50; OR supplied, post-paid, for the price.

Nos. 228 to 232.—Ladies' Gold Set—Brooch and Earrings.—Latest designs. Rolled Gold Plate, beautifully enamelled, and can be furnished with Ruby, Garnet, Pearl, or Sapphire ornaments. The wires in the earrings are solid gold. All but one (the garnet ornament) have an attachment at the back of the brooch for watch-chain.

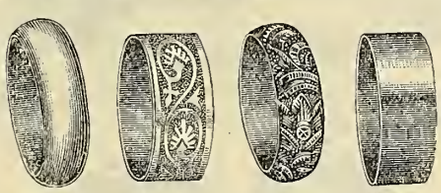
No. 228.—Price $6.00.—Sapphire Set. Will be sent, post-paid, for **7** subscriptions at $1.50 each.

No. 229.—Ruby Set.—Price $3.00. Will be sent, post-paid, for **3** subscriptions at $1.50 each.

No. 230.—Price $3.00.—Enamelled Pearl Ornaments. Will be given, post-paid, for **3** subscribers at $1.50 each.

No. 231.—Price $3.00.—Very Chaste Pattern; Pearl Ornaments. Will be given, post-paid, for **3** subscribers at $1.50 each.

No. 232.—Price $2.50.—Very Pretty Set of Ruby Ornaments, and Enamelled; the Set will be sent, post-paid, for **3** subscribers at $1.50 each; OR we will supply these for the price, post-paid, in all cases.



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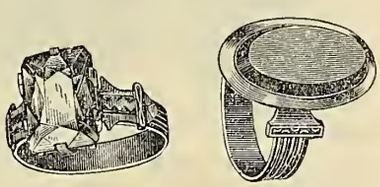
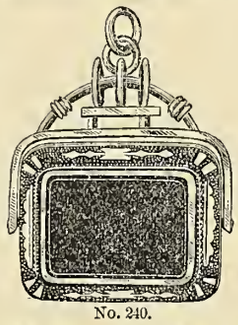


No. 237. No. 238.

No. 239.

Nos. 233 to 239.—Finger Rings.—Price $1.00.—These are of Rolled Gold Plate, and of the Latest Patterns. They are entirely new, and the Stones are Genuine Onyx and Amethyst. We will present one of these "Rings," free and post-paid, to any present subscriber who will send us **1** new subscription at $1.50; OR we will supply them for the price.

Watch Charms and Lockets.—Rolled Gold Plate. Latest style. Genuine Stones. Elegant.



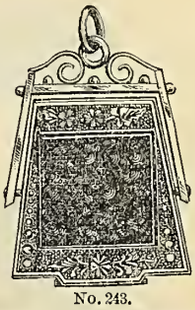
No. 240.

No. 241.

No. 240.—Locket.—Price $2.50.—Very handsome. Given, post-paid, for **3** subscriptions at $1.50 each.

No. 241.—Bloodstone Locket.—Price $3.75.—Place for 2 Pictures. Given, post-paid, for **4** subscriptions at $1.50 each.

No. 242.



No. 243.

No. 242.—Watch Charm.—Price 75 cents.—Given to any present subscriber who will send us **1** new subscription at $1.50.

No. 243.—Onyx Locket.—Price $2.50.—Given, post-paid, for **3** subscriptions at $1.50 each.

No. 244.

No. 244.—Locket.—Price $1.25.—Given, post-paid, for **2** subscriptions at $1.50 each.

Any of the above supplied for the price, post-paid.

No. 245.—Self-Adjusting Watch Key.—*Gold-Plated.* Price $1.00 and $1.50. The keys are all tested by the manufacturer before being sent us. For **2** subscriptions at $1.50 each we will send, post-paid, a pretty gold-plated key, price $1.00, and for **3** subscriptions we will send a handsome celluloid key, tips gold plated, price $1.50; OR we will supply them, post-paid, at the prices named.

The "Gold Thimble" described above is Very Elegant.

GOLD-PLATED

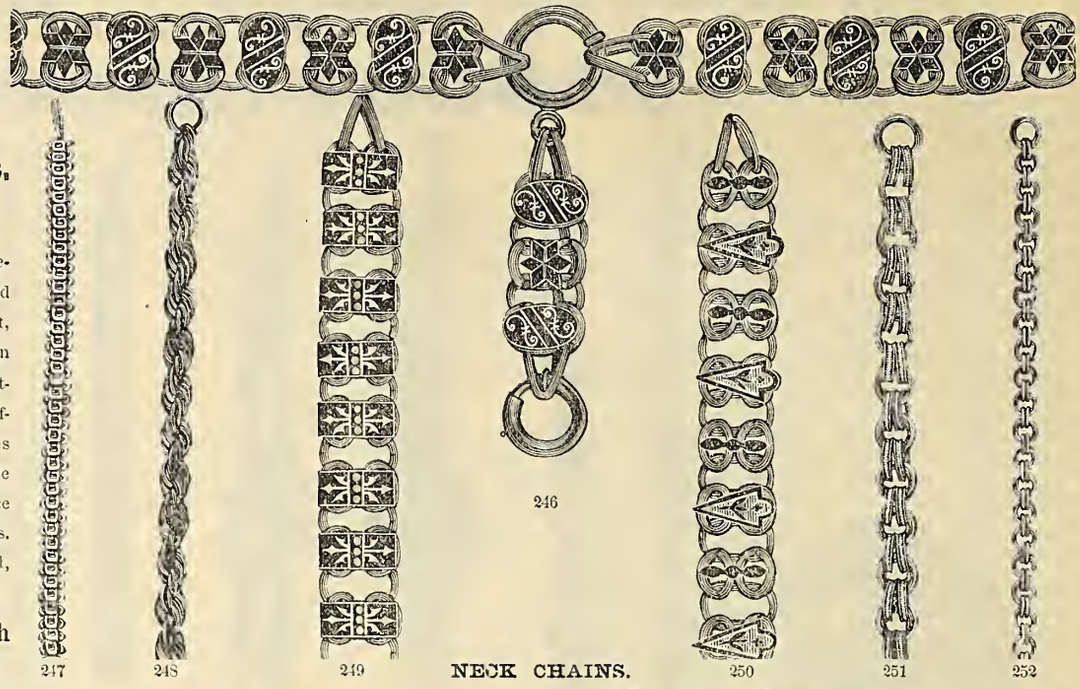
Ladies' Neck Chains, Watch Chains, Bracelets, Sleeve Buttons, &c.

ELEGANT PATTERNS.

Latest Patterns.

Like those on the preceding page, these Elegant Articles of Jewelry are manufactured and expressly supplied to us, by special arrangement, by one of the Oldest and most Reliable Firms in the United States, one which has been in existence more than half a century. All of the different pieces of Jewelry are made from Patterns brought out in the Summer of 1882. Therefore those who secure them can have the assurance that they are receiving the Very Latest Patterns. Any one of these articles will be sent, post-paid, on receipt of the price given.

Gold-Plated Neck Chains, Watch Chains, Bracelets, Etc., Etc.



247 248 249 NECK CHAINS. 250 251 252

Nos. 246 to 252.—Seven Beautiful Neck Chains.—These articles are all of 14-Carat Rolled Gold Plate, and are made by one of the most reliable manufacturers. They will with little care, last for years, and cannot be distinguished from the Genuine Gold article. They are of the very latest patterns, and will make Elegant Holiday Presents.

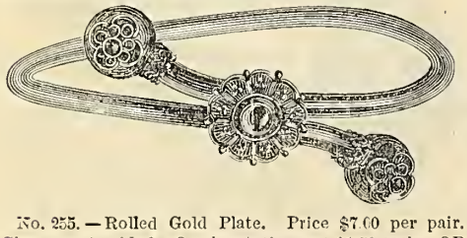
	Price.
No. 246, given, post-paid, for **6** subscribers, at $1.50	$5.00
No. 247, given, post-paid, for **2** subscribers, at $1.50	$2.00
No. 248, given, post-paid, for **4** subscribers, at $1.50	$3.25
No. 249, given, post-paid, for **6** subscribers, at $1.50	$5.00
No. 250, given, post-paid, for **6** subscribers, at $1.50	$5.00
No. 251, given, post-paid, for **4** subscribers, at $1.50	$3.25
No. 252, given, post-paid, for **3** subscribers, at $1.50	$2.50

OR any of the above will be supplied, post-paid, for the price.

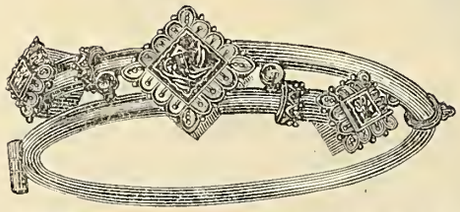
No. 253 to 258.—Bracelets.—These Bracelets are all of Elegant Design and Workmanship and are very finely finished. All the Tips or Ornamental Parts are of Solid Gold. They are not cheap-looking articles, but are equal in looks and finish to those costing many times the price at which we offer these as Premiums.

No. 253.—Solid Silver. Price $5.00 per pair. Given, post-paid, for **6** subscriptions, at $1.50 each; OR sent post-paid for the price.

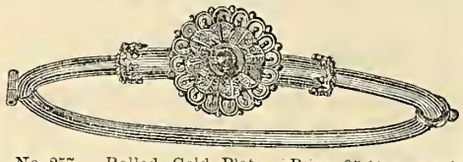
No. 254.—Rolled Gold Plate. Price $4.50 per pair. Given, post-paid, for **5** subscriptions, at $1.50 each; OR sent post-paid for the price.



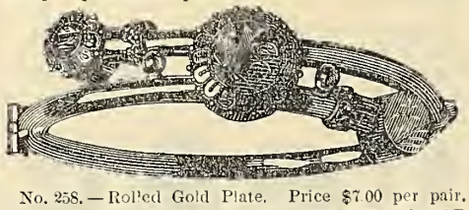
No. 255.—Rolled Gold Plate. Price $7.00 per pair. Given, post-paid, for **8** subscriptions, at $1.50 each; OR sent post-paid for the price.



No. 256.—Rolled Gold Plate. Price $7.00 per pair. Given, post-paid, for **8** subscriptions, at $1.50 each; OR sent post-paid for the price.



No. 257.—Rolled Gold Plate. Price $5.00 per pair Given, post-paid, for **6** subscriptions, at $1.50 each; OR sent post-paid for the price.



No. 258.—Rolled Gold Plate. Price $7.00 per pair. Given, post-paid, for **8** subscriptions, at $1.50 each; OR sent post-paid for the price.

Sleeve Buttons for Ladies or Gentlemen.

Nos. 259 to 263.—These Buttons have the Patent Acme Lever Back, and are all heavily gold-plated. The stones with which they are mounted are genuine. By means of the patent device these buttons are readily inserted in the cuff.

No. 259.—Plain Gold.—Price $1.00.—Given for **2** subscriptions at $1.50 each, post-paid; OR sent post-paid for the price.

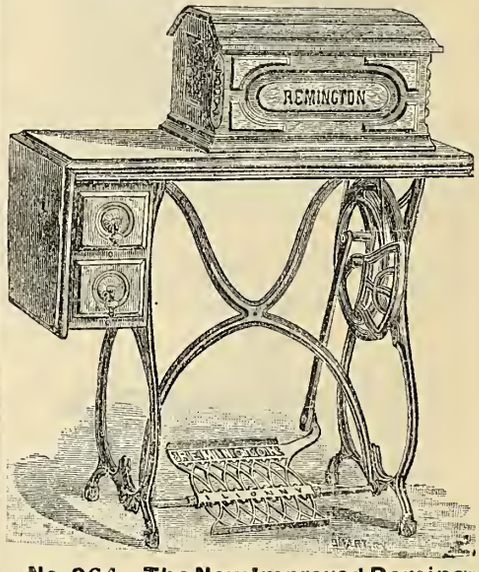
No. 260.—Moss Agate.—Square design, as shown in the cut. Price $1.75. Given for **2** subscriptions at $1.50 each, post-paid; OR sent post-paid for price.

No. 261.—Onyx Button.—Price $1.00.—Given for **2** subscriptions at $1.50 each, post-paid; OR sent post-paid for the price.

No. 262.—Moss Agate.—Oval shape. Price $2.00. Given, post-paid, for **3** subscriptions at $1.50 each; OR sent post paid for the price.

No. 263.—Jet Sleeve Buttons.—Price $1.50.—Given, post-paid, for **2** subscriptions at $1.50 each; OR sent post-paid for the price.

SOMETHING for EVERY MOTHER, SISTER, and DAUGHTER.



No. 264.—The New Improved Remington Sewing-Machine.—Price $50.00.—*Delivered free.*—This Machine has sprung rapidly into favor, as possessing a most desirable Combination of Good Qualities, namely, light running, smooth, noiseless, rapid, durable, with perfect Lock-Stitch. Its use is readily acquired; it is well constructed and beautiful in design. It embraces all the Modern Improvements. Accompanying every machine is a certificate signed by the manufacturers, which reads as follows:

...., 188..

The Manufacturers hereby warrant the Machine No. ..., sold to ..... by ....., ..., to be perfect in its construction, and to be made of good material; and they promise that should there be occasion to repair the same, from any defect in material or construction, within three years from the date of sale of said machine, they will make the necessary repairs free of expense to the owner of said machine.

We will **Present** one of these Elegant Machines, like the engraving, for **40** new subscribers at $1.50 each.

☞OR we will send the Machine, expressage paid, for the price, to any part of the United States. We can also supply lower-priced Machines of the Remington Make

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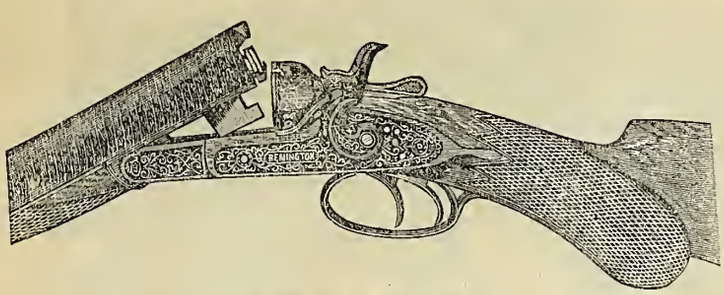

No. 265.—NEW (1882) MODEL.

THIS IS A MODEL OF THE Famous New GUN.

No. 265.—New Splendid Double-Barrel Shot Gun.—*Remington's New Model* (1882).—Price $45.00.—An entirely new Gun, that excels all others in the most desirable shooting qualities, in accuracy, reliability, and penetration. In this Gun the celebrated and justly popular *Scott Pattern Top Lever Action* is used. This Action is without doubt the very best that has yet been produced, and together with the Double Bolt on the interchangable plan, Rebounding Locks, Patent Fore-end, large Head Strikers, Extension Rib, selected Walnut Stock, Pistol Grip, and Choke Bore, makes this firearm the most complete and most desirable, as well as the cheapest Gun in the market. We are able to pronounce this Gun, by actual trial, superior to any other in the market. The Remington Guns shoot with great strength and accuracy, and all that has been required to perfect them is the New Action. We have often said this, and are now gratified to find the New Action in this new model just brought out. We can supply either 10 or 12 Gauge, and 30-inch Barrels. **50** subscriptions at $1.50 each will secure this Gun; OR we will forward it for the price. Sent free of carriage east of Missouri River.

No. 266.—Single Barrel, Central Fire, Breech-Loading Shot Gun.—Price $15.00.—Rebounding Lock, Pistol Grip, Oiled Walnut Stock, Checkered, Patent Fore-end, Choke Bore. The Barrel is of solid steel, as are also the Hammer, Bolt, and Trigger, and the Gun is so constructed with a Patent Safety Catch, that it cannot be fired unless the Barrel Bolt is securely fast in its proper place; 10 and 12 Bore, 30 and 32-inch Barrels, Nickel Frames. *This is the best Single Gun in the market.* **25** subscribers at $1.50 each will secure this Gun; OR we will send it (express paid, east of Missouri River,) for the price.

No. 267. — RIFLES — Remington's Breech-loading Single-Shot Rifle. — Price $21.00.—This is the safest and the most accurate Single-Shot Rifle now made. The action is so perfectly simple that it does not get out of order, and yet the charge cannot be fired until the breech is perfectly closed, thereby absolutely preventing premature explosions. For Gallery Practice and Small Game Shooting these rifles are unequalled. 22-cal., 32-cal., 38-cal., 44-cal., either Rim or Centre Fire. 28-in. barrel. **22** subscribers at $1.50 each will secure this fine rifle; OR we will send it, express paid east of Missouri River, for the price.

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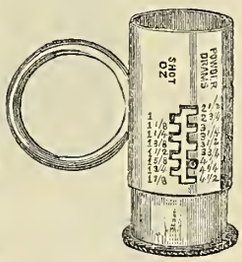
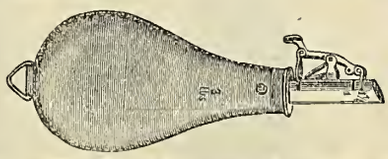
No. 269. — Popular Long-Range Creedmoor Rifle.—Price $80.—Vernier and Wind-Gauge Sights, with Spirit Level and 2 extra Discs, using 44-cal. 2 4/10 straightshell, 90 to 100 grains powder. **80** Subscribers at $1.50 each will secure this superb rifle; OR we will send it, express paid, east of Missouri River, for the price.

No. 270. — Revolvers.—Price $2.50.—A good Nickel-Plated, 5-Shot, 32-Calibre Revolver, with Steel Barrel and Cylinder. Will be sent, post-paid, on receipt of **4** subscriptions at $1.50 each; OR we will supply, post-paid, for the price.

No. 271.—Double-Action Revolvers.—Price $8.50.—A new, first-class, Nickel-Plated Double-Action Revolver of the Latest and Most Improved Pattern. 32, 38, 41, or 44-Calibre; Rubber Stock. Will be sent, post-paid, on receipt of **11** subscriptions at $1.50 each; OR we will supply, post-paid, for the price.

No. 272. — Shot and Powder Measure. — Price 50 cts.—Made of Britannia, with ring handle and slides. Very convenient, and can be readily carried in the vest pocket. It has gauges for both powder and shot. Presented to any present subscriber sending us **1** *new* subscriber at $1.50; OR sent, post paid, for 50c.





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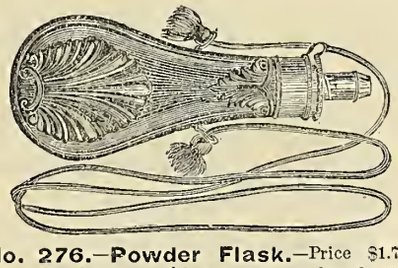
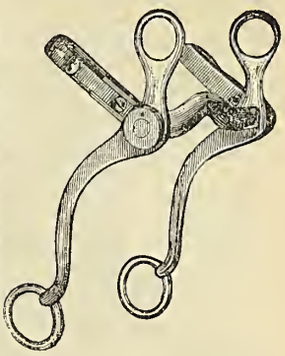


No. 276.—Powder Flask.—Price $1.75.—8 oz., made of copper, with patent top and cord attachment. Sent, post-paid, for **3** subscriptions at $1.50 each; OR sent for the price, post-paid.

No. 277. — Compass. — Price $1.00.—Brass, with Cover, Metal Dials, and Stop. Will be sent, post-paid, for **2** subscriptions at $1.50 each; OR supplied for the price, post-paid.

No. 278.—Leggins.—Price $3.00.—Best Canvas, full bound with Bridle Leather, Billets sewed on. Will be sent, post-paid, for **4** subscribers at $1.50 each; OR supplied for the price, post-paid.

No. 279.—Whitman's Riding or Driving Bit. —Price 75 cents. A very popular Premium, adopted for use by the U. S. Army. Made of the best material. Can be used in any bridle, or five-ringed halter. We will **Present** 2 of these bits on receipt of **2** subscriptions at $1.50 each; OR we will furnish them, post-paid, for 75 cts. each.



No. 280.—Compass.—Price $2.50.—Brass, with Hinged Cover, Jewelled Needle, Raised Dial, and Stop. Will be **Presented,** post-paid, to any one sending us **3** subscriptions at $1.50 each; OR supplied for the price, post-paid.

No. 281. — Dog Call or Whistle.—Price 50 cents.—Britannia metal, handsomely ornamented, with ring attachment. Sent post paid for 50 cents, or presented, post-paid, to any present subscriber sending us **1** *new* subscription at $1.50.

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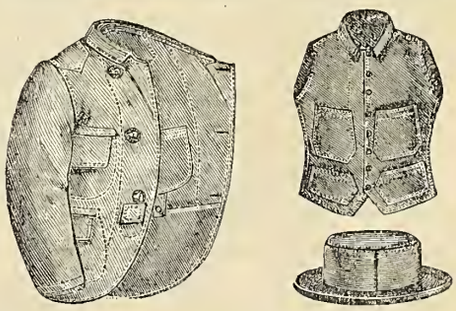

wearing quality, and reasonable in price as a sportsman could possibly find. Warranted to be perfectly made—buttons clinched. Rules for Size—Send breast measure and length of sleeve, from middle of back to wrist, with arm raised and bent, for coat; breast measure for vest; waist and in-seam measure for pants; size of head for hat. **Presented** for **13** subscriptions at $1.50 each; OR supplied for the price. We pay express charges.

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AMERICAN TOOL COMPANY.—Tool Chests, etc., 116 Chambers St., N. Y.
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BARKER MF'G. CO.—Gold Thimbles, Providence, R. I.
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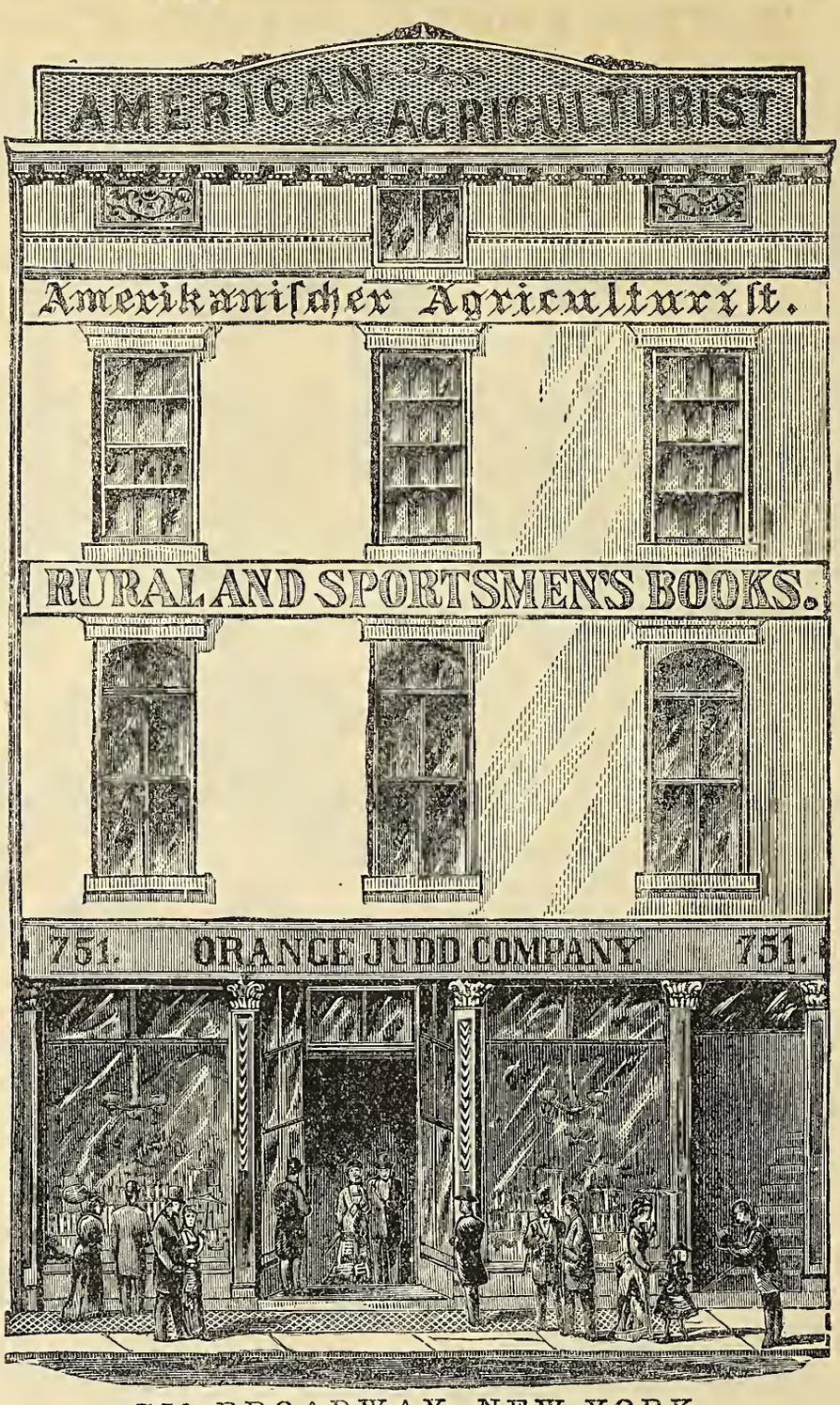

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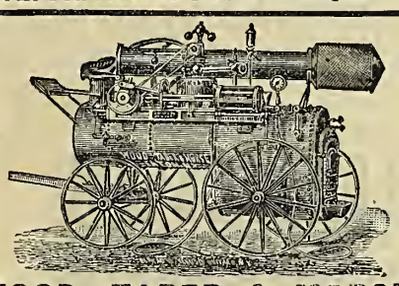

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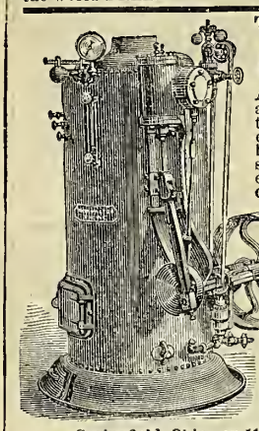

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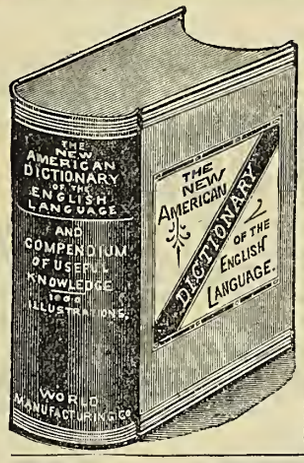

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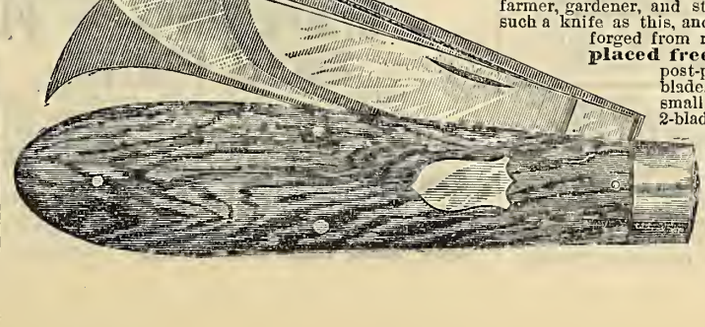

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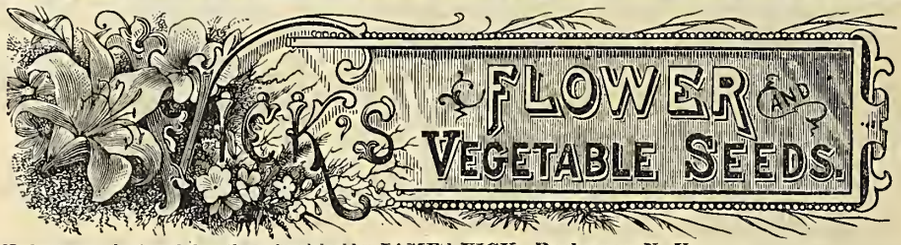

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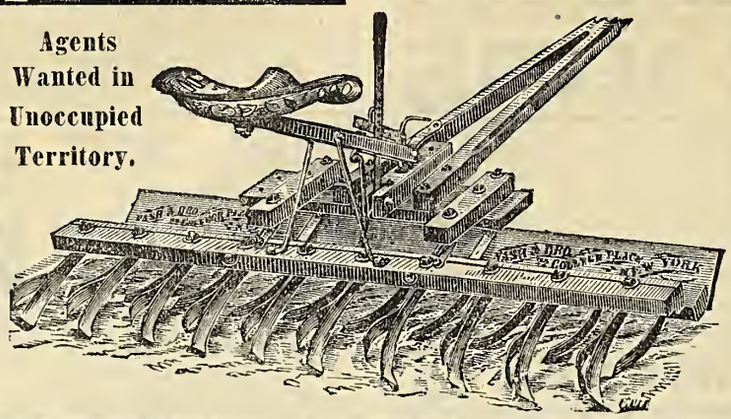

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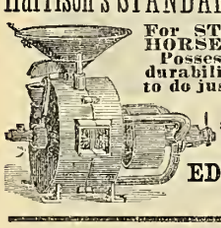

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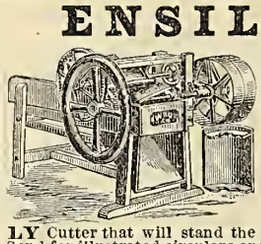

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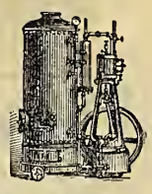

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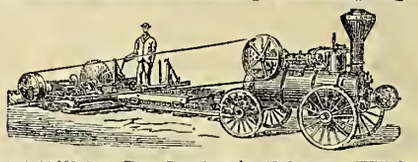

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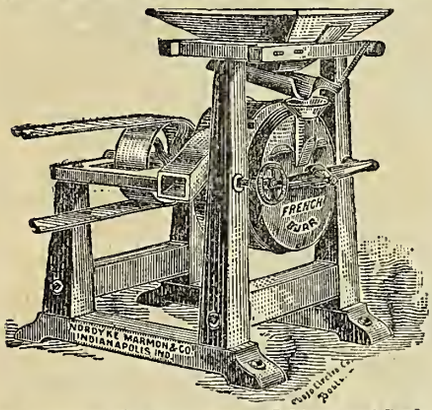

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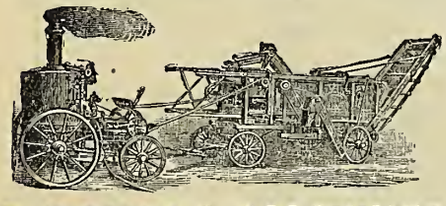

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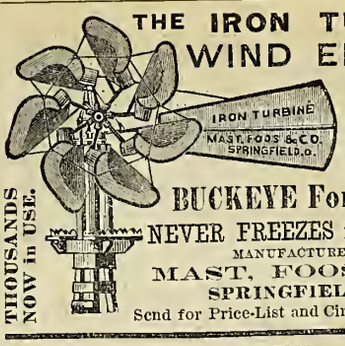

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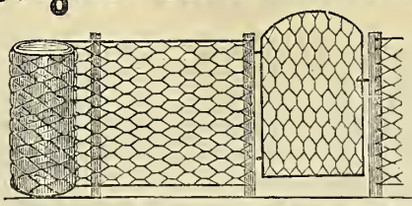

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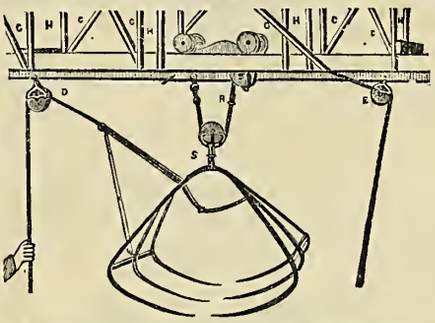

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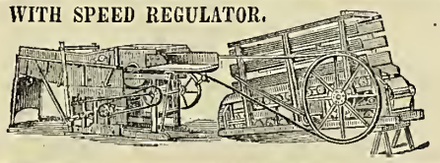

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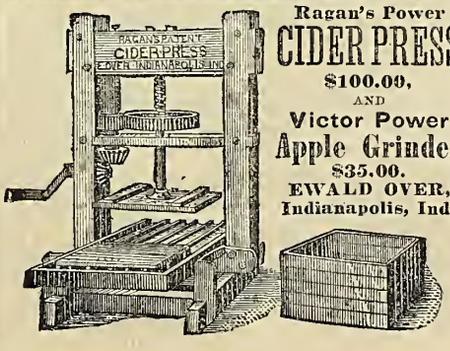

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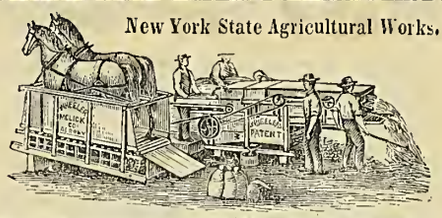

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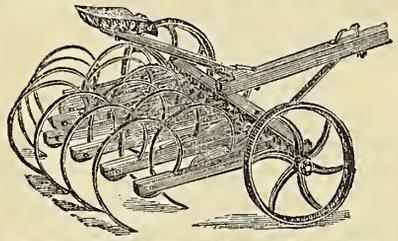

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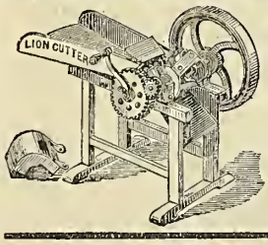

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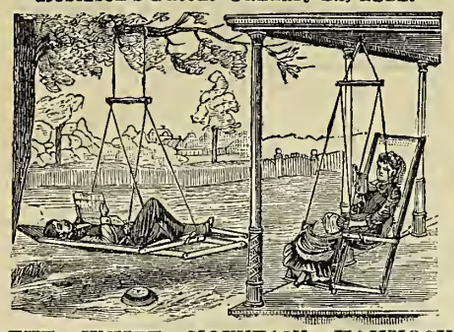

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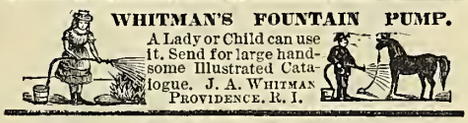

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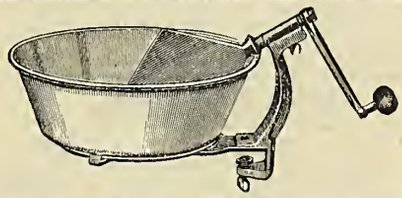

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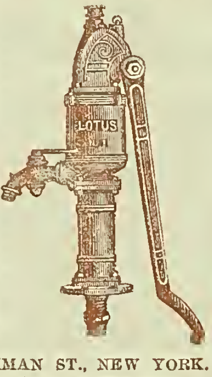

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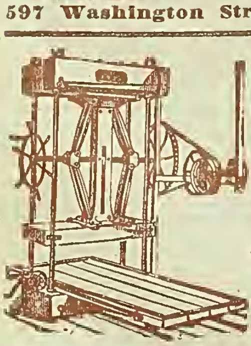

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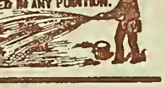

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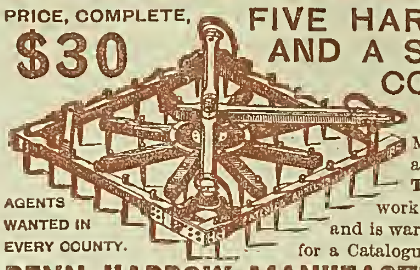

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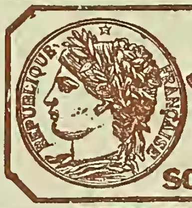

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VOLUME XLI.

NUMBER 11.

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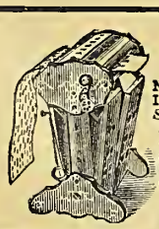

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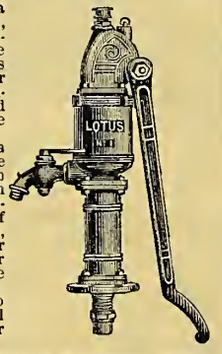

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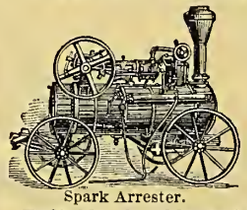

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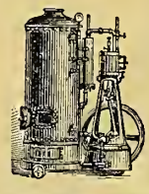

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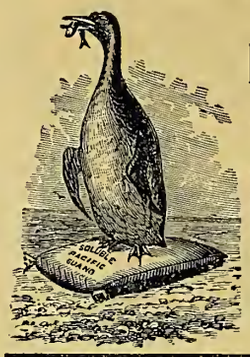

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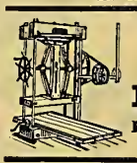

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FOR THE

FARM · GARDEN · & · HOUSEHOLD

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VOLUME XLI.—No. 11. NEW YORK, NOVEMBER, 1882. NEW SERIES—No. 430.

THANKSGIVING IS COMING.

Drawn and Engraved for the American Agriculturist.

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SOMETHING FOR EVERY SUBSCRIBER FOR 1883.

SEE THIRD COVER PAGE.

AMERICAN AGRICULTURIST.

NEW YORK, NOVEMBER, 1882.

Thanksgiving is Coming.

Of all the people in America, who on the thirtieth of November will keep the great national holiday —Thanksgiving, none have more reason to rejoice and return thanks, than the farmer who throughout the year has sown the seed in the fertile earth, watched its development, "first the blade, then the ear, then the full corn in the ear," and at length garnered in the bounteous gifts of the harvest.

All over the land, mighty streams of golden grain have flowed into the granaries, and barns, filling them to repletion. The trees have bent beneath their load of luscious fruit, until it was gathered into barrels, or crushed between the wheels of the mill, to distil its sparkling juice. And now—as the world is preparing for its winter's sleep—the fires are lighted on our hospitable hearths, our homes and sanctuaries are decked with sheaves of wheat, and the purple clusters of the vine, and with thankful hearts we gather within them, to gladly celebrate our Harvest-Home.

And mention must be made of the turkey—the truly American bird—who will at this season be slaughtered on both moorland and farm, and bring a welcome supply of pocket money to the farmer's wife, who has carefully tended, and protected the young brood through sunshine and shower.

As at the old Roman feasts, the royal peacock formed the choicest dish of all, so the stately turkey, who for months has proudly lorded it over the barn-yard community, will now grace our Thanksgiving table, as a fitting head-piece to the board.

This month the sportsman with game-bag and rifle, will make nightly raids upon field and woodland, to shoot the wild turkeys from the roost, bringing down with unerring aim these denizens of the wild woods, in whose peculiar pheasant-like flavor—said to be produced by their feeding on the partridge-berry—the epicure particularly delights.

Although in its wild state the turkey was exclusively an inhabitant of North America, some of the earlier naturalists supposed it to be a native of Africa, and the East Indies, and it derived its name from the probably mistaken belief, that it originated in Turkey. However, it was discovered in this country, and carried to England, in the early part of the 16th Century, and has since become acclimated in most parts of the world.

We may imagine that these birds figured at the first Thanksgiving dinner of the Pilgrim Fathers, for we read, that "after the first harvest of the Colonists at Plymouth, in 1621, Gov. Bradford sent four men out fowling, that they "might after a more special manner rejoice together." And it is most appropriate that one of the largest platters of the elegant dinner set, recently decorated for the White House at Washington, and representing the Fauna and Flora of America, should bear upon it a wild turkey in all its native glory.

But the domestic fowl is now our real Thanksgiving bird, a fine specimen of which is shown in our frontispiece. See how haughtily he seems to strut along, little dreaming that the farmer and his smiling companion—who have daily brought him his quota of meal—are now his secret enemies, endeavoring to take his life: and that soon, decked with paper rosettes, he will adorn some shop window, or hang limp across a market basket, in a city street.

Thanksgiving is peculiarly the American farmer's day, and a farm is the place to spend it; when the wood fires roar merrily up the wide chimneys; the New England kitchen reveals wondrous works of art, in the form of "savory mince and toothsome pumpkin pies;" and the genial host welcomes his guests with open-handed hospitality. Happy is the city man who has country friends to spread wide to him their farm-house door, and bid him come and join in their Thanksgiving.

Prepare for the Holidays.

The beautiful custom of giving gifts to parents, children, relatives, friends, and neighbors, is coming more into vogue every year. It is a pleasant one, and serves to bind the ties of affection and friendship. Nearly everybody delays to procure their Holiday Gifts until the last hour, when they are pressed for time, and are often unable to satisfy themselves. Begin now to make your purchases, and by looking over our Premium List, which accompanied the October number, you cannot only find something to suit every taste, but you can procure the articles with no expense and a little effort, in securing subscriptions for the *American Agriculturist.* For example: One new subscriber will entitle you to a New American Dictionary, with Fifty Thousand Words, or to an elegant Gold-mounted Pencil. For two new subscribers one can secure a very handsome Lady's Portmanteau, of the latest pattern, or a Fruit Knife and Nut Pick. Three new subscribers will ensure you a beautiful Watch Charm and Locket, or a Canvas Portfolio. Four new subscribers will entitle you to receive, post-paid, a substantial Watch and Chain, or a Multum-in-parvo Pocket Knife; and so on. But you must look all over the Premium List to discover what a very great number of desirable things you can procure for your Holiday Presents without money, and with very little trouble. Look especially at the List of our One Dollar Books, elegantly bound and printed, which are given for one new subscriber. Any one of our subscribers who may have lost their Premium List can have another forwarded to them, if they will write us to that effect. We trust, however, that all of our subscribers have preserved their Premium Lists, and are now securing many Premiums for themselves, and many new subscribers for the *American Agriculturist.*

Suggestions for the Season.

Fall Plowing.

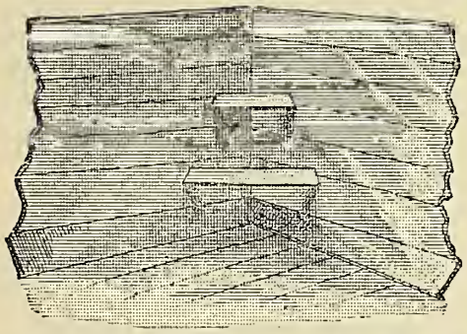
Anyone who has seen the best European farming knows how important it is to thoroughly prepare the ground for the seed. The working of the soil adds nothing, but it helps in changing the form of the plant food compounds, and thus plowing and harrowing becomes indirectly a source of nourisbment. The soil is a vast storehouse of plant food, which it holds by virtue of its insolubility. Furthermore, it is only through the action of the air and all those processes, chemical and otherwise, which are covered by such terms as weathering, nitrification, etc., that these essential elements are brought into a soluble form and made available for the use of the growing plant. The chemistry of the soil, as it becomes better understood, teaches in every line the importance of a frequent stirring of the surface of the cropped field. With this in mind it is to the purpose to urge the importance of fall plowing. For other than chemical reasons the stubble or sod may be turned under this fall. Not only will the air circulate more freely, and the processes of reducing the insoluble substances go on more rapidly, but the mechanical texture of the heavy soil especially will be improved. Should insects or their larvæ or "worms" abound in the earth they will be turned out of their winter quarters and destroyed. Aside from these advantages there is a lull in the farm work at this season, and any plowing, or other labor with the soil, will help materially to lessen the rush and hurry that otherwise comes with the busy months of spring. The thoughtful and successful farmer so plans his farming operations that one season helps the next in more ways than one.

Better and Better.

The Watch and Chain described so fully in the October Supplement, page 447, has proved to be a most popular Premium. In that Supplement we offered to send this very useful and ornamental Watch and Chain, post-paid, free, for five new subscribers: we have since made still better terms with the manufacturers, whereby we are enabled to give this most capital Premium **for only four new subscribers** for 1883, at $1.50 each.

Steps and Angles in Bins.

It often occurs that bins for grain, bran, brewer's grains, etc., are so deep that it is not easy to get in and out of them, except by the use of a ladder or movable steps. This trouble is obviated by fixing round oak or ash sticks, like ladder rungs, in one corner. The lower ones, if there are several, may be longer than those above, for convenience, as seen in the engraving. This also shows how the angles between the walls and floors of such bins as



are used for meal, bran, or any ground feed, ought to be made. The angles are finished by planing off two edges of a four-inch board to form a bevel of 45 degrees, and nailing it over the angle between the wall and the floor. This makes the sweeping out of a bin or granary an easy matter, and leaves very little material for meal worms and their kindred.

In-door Work.

The importance of planning for in-door work during stormy days, is not fully appreciated. There are many things that can be done as well when it rains, as during fair days. With small farmers, the threshing of the little amount of grain raised, may be done by hand in stormy weather. The tools should be thoroughly cleaned, mended, and painted if this is needed, and put away to be in readiness for the busy time of spring. A good day's work may be given to the repairing and oiling of the harness. There are enough jobs that may be done under cover, to fill all the rainy days, if there is only planning for it. At this season there may be feed racks needed, and a day at the tool bench is far more profitable in every way, than one spent in lounging, especially if it be done at the village store. Make the most of every day, and not count stormy days as blank ones in the record.

Marketing Poultry.

Poultry which it is not intended to winter, are to be fattened before really severe weather comes on; otherwise money will be lost by them. They will barely hold their own in December on feed which caused them to increase rapidly in weight a month earlier. Those who have watched the market, know that autumn prices usually are highest a little before, and a little after Thanksgiving, say before the middle of November, and soon after the first of December. The reason is, that those who are fattening poultry keep them back for a short time before Thanksgiving day, and before Christmas time, in order to get them in prime order for sale at those times. The result is usually an overstocked market, and plenty or cheap poultry. Soon after the first of January, prices go up again, and well they may, for one or two months' feed has been consumed, and very little weight added.

Capons grow rapidly, and their growth takes up the food, so that we have to wait until growth stops, before they fatten. It is well, therefore, that this delicious class of poultry should not make its appearance before the first of February, when the game-laws prohibit venison, quail, and other choice game from being exposed for sale. At this time, consequently, fat capons and pullets meet a good market, and even during Lent, when a considerable portion of the Christian world abstain from meats, there is a sharp demand for the highest prized meats, to grace the table of the rich on Sundays. It is therefore well to have fine capons ready to supply this demand.

Selection of a Farm.

There are many things to be considered in the selection of a farm. To the rich gentleman who wishes to retire from the noise and tumult of city life, a farm has a different meaning than to the poor man who must toil daily for the maintenance of himself and family. The former will look through golden eye-glasses and seek for luxuries in the country, while the latter must obtain the necessities of life. The one will let individual taste rule in the choice, the other asks himself, "Is this the best place for me to do substantial farming?" No general rules can be given for the rich man who buys a farm for the purpose of spending money, while for the one who seeks to make a living from the land, there are some words of advice.

The size of a farm should be suited to the capacity of the pocket-book. Many young farmers make the mistake of buying a large farm with little money to pay for it. There is nothing that so binds a man as a heavy mortgage. It eats the very heart out of the farmer, and hangs like a leaden weight upon every aspiration of his wife and children. It is better to buy a small farm and have enough capital to work it well. As the surplus increases, it may be invested in more acres, or in a better culture of those that have already proved profitable. There is a size below which many of the economies of the farm can not be practised to the best advantage, and on the other hand there is danger of going beyond that acreage where the most profitable farming may be carried on. It requires considerable executive ability to manage a large farm, and therefore many men are excluded from such by a lack which they may not fully appreciate until the trial has been made and the failure recorded. Farming is not like the taking of a citadel, and can not be done successfully with a rush and a noise. It is a thoughtful and steady working out from well-laid plans—a conquest for crops, and the head must be clear that wins where the seat of a campaign for a lifetime covers townships or even square miles. The soil is the foundation of farming, and it should be fitted to the kinds of crops that it is desired to raise. The differences in the nature and capacities of sand and clay should be understood, and a favorable mixture of the two obtained if there is an opportunity for choosing. A rich soil, with proper management, means good crops at once, but it may be as profitable to invest much less in an equal area of over-cropped land, and bring it up to a high state of cultivation by green manuring and other methods of restoration. The farm house is to be the home of the family, and therefore the locality for the farm should be healthful. The richest land for the price may be on the border of a malaria-breeding swamp, but the profits of the investment may be more than balanced by the doctor's bills and loss of time, not to mention the discomfort of fevers in the household. It is important that there be an abundant water supply on all farms, both for the family and the live-stock. There are social considerations that no farmer should overlook in making a choice of a farm. He lives not to himself alone; the children need the privileges of good schools, etc.; in short, the community should be one in which sympathy, goodness and intelligence prevail.

With a good farm of proper size, healthfully located, abundantly supplied with water, good neighbors, and a handy market, a man is so well situated that he ought to make himself and those around him happy. Choose well, and hold on to the choice.

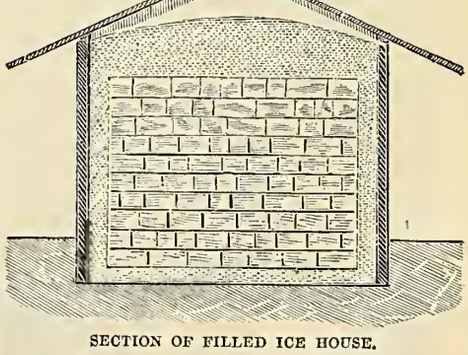
The Growth of the Manure Heap.

Most of the products of the farm have been gathered for the year, but the manure heap should now begin a rapid and healthful growth. The manure crop is perhaps the most important one of the winter season, if not of the whole year. Upon its size and quality the success of the farm operations very largely depend. It should be the aim of every one who has acres to feed, for the production of good crops, to see that the most is made out of the droppings of his farm animals, and the litter that is used to absorb their urine and keep them neat and clean. The best manure is made under cover, and the greatest loss of fertilizing materials is when the manure is permitted to decompose so rapidly as to give off large quantities of ammonia; or when drenched with rains which wash away dark golden streams of the richest, best, and most costly of plant foods. The manure that every farmer should plan to make is well rotted, to be quickly available for the growing crop, and has not sustained the serious loss that comes from water passing through it. There is no doubt that it would pay many farmers who now feed in large open yards to build sheds, under which the manure may be protected.

There are other points in farm economy gained by shed or stable feeding. It takes less food to keep the animals warm and in a healthful condition. A shivering animal is an appeal to both the pocket and the heart of the owner. Give the farm stock good, comfortable winter quarters, and there will be a saving in feed, a better preservation of the manure, and a kindlier feeling all round.

Prepare for the Ice Harvest.

The uses of ice increase every year, and at this season, we have many inquiries as to the construction of buildings for the storing and keeping of this important winter product. A house that will hold enough ice to meet the demands of the average farmer, may be constructed at small cost. There are some general principles to be observed, in locating and building an ice house. There needs to be good drainage of all water from the bottom of the building; no admission of air from beneath, and ample ventilation above. A non-conducting packing material is needed all around the ice, by which it may be kept as much as possible from melting. For this purpose, sawdust, spent tan, wheat chaff, or marsh hay may be used. In filling the house, the ice should be cut into blocks of regular size, that they may pack closely without leaving large air spaces between them. It does not matter so much about the thickness of the ice, if the blocks are properly packed, the thickness of



SECTION OF FILLED ICE HOUSE.

six to eight inches is preferable. Ice keeps best when put in during freezing weather, with enough water thrown over each layer to fill the spaces between the blocks with ice, to the exclusion of the air. The door of the ice house may be left open for a few days before filling, that the ground beneath may become thoroughly frozen. The engraving shows a construction of an ice house that is filled properly. A ventilator is provided at the top, which permits of a circulation of air over the thick covering of sawdust placed upon the ice.

The Muck and Peat Supply.

With many farmers, peat or muck is the cheapest and best additiou they ean make to home-made manures. We have tried these for many years, even within a short distauce of tide water, aud the wrack of the sea shore, and found them always a paying investment. The fall when the swamp or peat bog is comparatively dry, is usually the best season to get out a year's supply. Dig it in broad trenches, six or eight feet wide, and go down at least six feet if there is tbat depth of muck. In this way, you can work with little trouble from the water, below the water level iu the bog. Thrown out upon the bank, the material will soon become dry, and will be improving under the action of the frosts, and tbe atmosphere, all through tbe winter. Six inches of dry peat covered with leaves, or litter of any kind, makes excellent bedding in a stall, and when mixed witb the urine and dumping of the cattle produces a valuable fertilizer. The success of a farmer is generally measured by the length, breadth, and higbt of his compost heaps. Study the aritbmetic of your muck and peat beds, and work out the salvation of your soil.

The Root Harvest.

A large part of the work of harvesting of tbe root crop is done this month. Potatoes are not roots, but are often, and quite naturally, classed with them. They should be dug so soon as growth

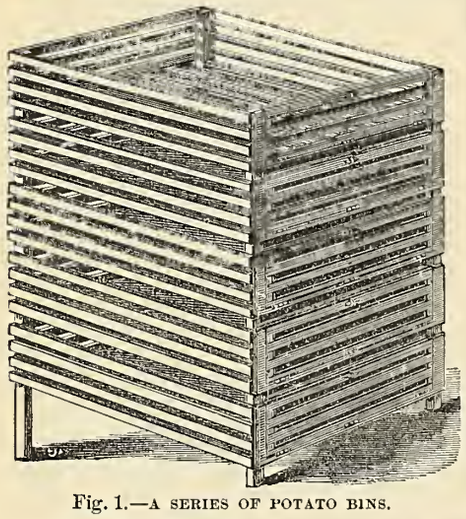


Fig. 1.—A SERIES OF POTATO BINS.

is completed, and ought to be in winter quarters before the middle of the month, and in most sections much earlier than this. The rot, which has been so destructive some seasons, is favored by the tubers remaining in the soil, especially if the weather is wet and the ground is much soaked by water. Store the potatoes in bins (fig. 1) in a dry, cool cellar, with ample ventilation. They may be put in pits in a dry place in the field, and covered with straw, boards, and enough earth to keep the tubers from freezing. If there are any rotten potatoes at digging time, they should be thrown in the burn heap and destroyed, to prevent the spread of the rot fungus. Those that are only slightly af-

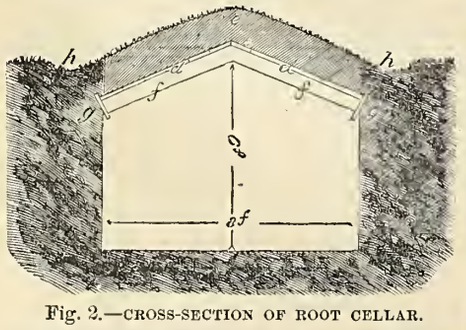


Fig. 2.—CROSS-SECTION OF ROOT CELLAR.

fected should also be removed and fed to farm stock. If a decaying potato remains in the bin or pit, it will communicate the rot to others, and may do much damage. Beets and mangels should be harvested so soon as the growth is finished, or the leaves have wilted from the action of the frosts. These roots will bear only slight frosts without injury. Much of the labor of digging may be done by a horse and plow. Run a furrow with a common plow close to one side of a row, and afterwards pass a subsoil plow near the other side when the roots are loosened and can be quickly removed from the soil. The method of pitting roots has been considered on page 488. A more substantial structure for keeping roots and other

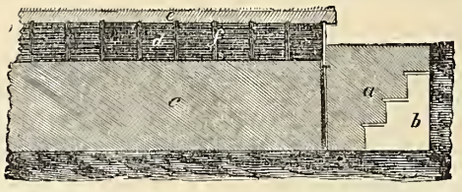


Fig. 3.—LONGITUDINAL SECTION OF ROOT CELLAR.

like products is shown in the accompanying engravings. Figure 2 shows a cross section of a field root cellar dug in dry ground. The excavation is 5 feet deep, 8 feet wide, and 10 feet longer than it is desired to have the cellar. One-half foot below the surface cut a place, *g*, *g*, to form an oblique support for boards 8 inches wide. Rafters, *f*, *f*, 5 feet long, are set in pairs upon these boards every 3 feet the whole length of the cellar. The roof is covered 12 to 18 inches with earth, and sodded, with a gutter provided at each side, *h*, *h*, for the removal of water. The ends are closed with double boarding, filled with sawdust, and provided with doors. Openings over the doors, supplied with movable shutters, give the necessary ventilation. A longitudinal section of the root cellar is shown in figure 3; *a* is the approach; *b*, steps; *c*, body of the cellar; *d*, the board roof; *e*, the earth covering; *f*, rafters. In light sandy soils it will be necessary to wall up the sides with stone or posts and boards. Such a cellar will last for many years, and be thoroughly frost-proof. If 30 feet long, and of the other dimensions given above, it will hold about 700 bushels of roots.

A Great Step Forward.

Our October number, with its great improvements in every direction, will give our subscribers some idea as to what the *American Agriculturist* is to be in the future. We are determined not only to make each number as good as the last, but still better. No expense will be spared in securing the very best journalistic and artistic talent to be had. Every day we are asked "How can you furnish so much original matter and so many beautiful engravings for the small sum of $1.50, when other magazines cost $4.00 a year." We ask you to direct the attention of your friends and neighbors to the merits of this Journal. If any of them would like a copy with a view to canvassing for subscriptions, please forward us their names.

November Notes on Farm Stock.

Horses, with their winter coats, sweat easily. When brought in warm, they should be rubbed dry and blanketed for an hour. Work horses should not be blanketed in the stable, but carriage horses, or those used only upon the road, may be kept warmly blanketed, for though by this they become more sensitive to cold, and must have more care, yet their coat does not grow so close and long, and they are much less likely to sweat when driven. Ground or crushed oats go farther, are better digested, and mix better with other feed than whole ones. They are the best winter feed for horses, but may be mixed with corn or barley meal or wheat-bran and middlings for work horses to advantage. Whole grain is not fed without waste.

Beeves.—In feeding for beef, the notions of each animal should be consulted—his preferences, likes, and dislikes. The object of feeding usually is to get the animal to eat all that he will digest well. Hence a variety should always be at hand, and the ration should be varied by feeding cooked, soaked, or dry meal, as the case may be, with hay and roots. Take great care not to over-feed, and in case of over-feeding, let starvation be the cure. Thus the animal will soon take to feeding again, but will be less likely to fall off much in flesh, than if "physicked."—Nature is the best physician.

Cows in milk need roots, pumpkins, or similar food, to make up for the lack of grass. Where silos are used, a moderate quantity of ensilage, if of good quality, is the best substitute for grass we can have in cold weather.

Sheep should have airy, well-littered sheds, with plenty of sunshine, and protected from snow. One great advantage of keeping sheep is to convert straw into manure. Hence much litter is usually strewn in sheep sheds, to the distress of the sheep, unless they have hard places to lie upon, because their feet and legs get so hot. A few platforms, like old doors, which can be shifted about every few days by turning over, will be greatly enjoyed, and will promote both health and comfort.

Swine.—Push fattening hogs forward as rapidly as possible. Keep them warm and cleanly. Charcoal broken fine and mixed with the cooked feed, is an excellent regulator and tonic, aiding digestion, and promoting fattening to such an extent that it is hard to believe it does not serve as food.

Propagating by Root-Cuttings.

There are but few perennial plants that may not be propagated by cuttings of some sort. With the majority, cuttings of the stems, if properly treated, will produce roots and form new plants. A few, notably some Begonias, the Gloxinias and others, are most readily propagated from the leaves, which are treated as cuttings. Still other plants are multiplied by cuttings of the roots. The use of root cuttings, to judge from their works on propagation, is much less common with European nurserymen than with our own, who employ this method for Raspberries and Blackberries almost exclusively. Unlike the stems, roots do not have regular buds, but they can, under proper conditions, be made to produce them. Hence, in making root-cuttings, we must give them the needed time, and place them under conditions favorable to the formation of these unusual, or "adventitious buds," as they are termed. As a rule, the cuttings should be made in autumn, and if properly kept during the winter, they will be ready to plant in the open ground by spring. The method with the Blackberry and Raspberry will illustrate this kind of propagation. When the season of growth is over, and before the ground freezes, the plants are taken up and their roots made into cuttings. Sometimes the larger roots are cut off with a sharp spade and taken up, leaving the plant in place. The roots of the size of a lead pencil and smaller, are cut into lengths of two or three inches. These are then stratified with earth in boxes. Any common box will answer, as it need not be tight. Bore several inch holes in the bottom, and place over these a layer of straw. Put in an inch or two of earth, a layer of root-cuttings; cover these with a layer of earth, and so alternating until the box is full. Nail on the cover, and bury the box in a well-drained place, so covering it with earth that it will not freeze. Another method is, to place the root-cuttings in alternate layers with damp Sphagnum Moss, and keep the box in a cool cellar. In spring the pieces of root will be found to have formed fibrous roots and one or more buds or shoots, and are ready to be planted in the open ground, where, by the end of the season, they will make strong plants. This method of propagation has a much wider application than is generally supposed, and may be tried with all plants of which the stems do not root readily, with fair prospect of success.

Some plants grow so readily from root-cuttings that this previous preparation is not required. This is the case with those trees and shrubs which

naturally throw up suckers, especially when their roots are wounded. The Ailanthus tree may be propagated by setting root-cuttings in a furrow, as if they were large seeds, and but few will fail to grow. A number of other forest trees and several fruit trees may be propagated in the same manner. This offers an interesting field for experiment.

Half-Hardy Shrubs.

A number of our shrubs are hardy in ordinary winters, but will not endure one of unusual severity, while others can not be depended upon in any winter. Both kinds must be taken up and housed, or be protected where they stand. One of the simplest methods of winter protection is to lay the plant down and cover it with a few inches of soil, as practised on the large scale with the European Raspberry. The Fig may be protected in the same manner, but its roots must be so trained as to allow of the bending. A modification of this is to cover the plant with sods, placed grass-side up. This method is advised for the so-called Mouthly Roses (the Bengal or China), which may thus be left in the beds with safety. On covering with earth or sods, it should not be done too early, but delayed until there is danger that the ground may be frozen.

But many plants can not be bent down, and such must be protected as they stand. The old gardeners used to take great pains to straw-up their shrubs, and make them into neat-looking bundles. Quite as effective a method of protecting is to use the boughs of some evergreen tree—spruce answers well. These are stuck in the soil around the shrub; or, if that is too large, some may be tied in its upper part. Some evergreen trees are tender when first planted, but when large and well established, are hardy. Such, while small, are easily protected by the branches of other evergreens. In the absence of other means, we have used simply common brush, kept from resting upon the shrub by using a few stakes to receive its weight.

Parsnips and Salsify.

The same treatment in winter will not answer for all root-crops alike. Beets and carrots are the least hardy of all, and when frozen lose their sweetness to a marked extent. The parsnip is not only not injured, but many think it is greatly improved by freezing. If the amount of sugar is not actually increased, its flesh is so modified that it tastes sweeter. The parsnip and salsify are our very hardiest roots (though we should include horse-radish,) and may be left without harm in the soil where they grew. But as we can not depend upon finding the ground open at all times, a share should be dug to supply the table. These may be packed in boxes or barrels, and if they are to be kept in the cellar, should be covered with sand to prevent them from shrivelling. They can as well be placed in some shed, or other out-building.

Young Fruit Trees.

Many seem to think that when they have planted an orchard, they have done all that the trees require. A neglected old orchard is a sorry sight, but a neglected young one is much worse. A stray animal or two, especially when snow is on the ground, will disfigure many trees in a short time by browsing their tops or gnawing the bark. Fences and gates need looking to. Young trees, especially those set last spring or this fall, should have a mound of earth at the base, not a mere heap thrown up carelessly, but made smooth and firm, in the form of a sharp cone, 12 or 15 inches high. This will not only aid in keeping the tree upright, but will prevent the attacks of mice. Should snow be deep enough to cover the mound, mice may work under it while it is light and newly fallen, and it will be necessary to go through the orchard and press the snow around each tree with the foot. Rabbits will work on the snow, not only barking the trunks, but we have known them, when the snow was sufficiently deep, to cut off the end of every twig within their reach. These animals have a great aversion to blood, and will not touch trees that have been smeared with it. In large orchards, blood is procured at a slaughter-house, and applied to the trees by means of a swab, made by tying a few corn-husks to a stick. Rabbits are in good condition this month, and the use of traps will both prevent mischief and afford material for an excellent pie or fricasee. Sometimes snow is very damp, and as it falls, lodges in the tops of the trees and accumulates there. If this is allowed to freeze, the branches will be badly injured should there come a strong wind. When snow thus gathers, it should by all means be shaken out of the tree before it has time to freeze.

The Asparagus Bed.

The tops should remain until their turning yellow shows that they have finished their work of preparing the roots for next season's yield. The tops should be burned in order to prevent the scattering of the seed, as an asparagus plant is a rather obstinate weed. This is one of the vegetables that can hardly have too much manure. An abundance of stable manure, supplemented by a good dressing of nitrate of soda, and in inland localities, one of salt. These, the nitrate and the salt, are best applied in spring, but the manure should go on before winter. While it is thoroughly hardy, the shoots appear earlier in spring, if the bed has a covering of three inches or more of coarse manure.

Wintering the Cabbages.

It used to be thought necessary to store cabbages in a cellar, or in some kind of a pit, a method of wintering now rarely followed. The usual way of keeping them is to select a dry place, if the bed where they grew was not so, and place the cabbages heads downward. They are sometimes placed close together in a single row, running across the bed or field, and a furrow thrown up to them on either side. The more common method is to lay them down to form a bed 8 feet wide, and by the use of the plow and shovels, cover the heads and a part of the stumps. The Savoys, with their curled and wrinkled leaves, do not keep so well as the Drum-heads, when laid down in this way. For those a ridge may be thrown up with the plow, and the cabbages laid against it, heads up; earth is plowed to the roots, and thrown in to partly cover the stumps. When cold weather comes, the heads are to be covered with cornstalks, leaves, or other litter. Neither of these methods allows a head or two to be readily taken for use. It is well to have the family supply in some place near at hand. If there is an unused pit or cold-frame, the cabbages may be set in them upright, and covered with shutters, or with straw or leaves. A trench may be dug and used in the same manner. Those who like cabbage greens, should prepare for them, by gathering up the stumps from which the heads have been cut, and covering them with earth against a ridge, or otherwise give them partial protection. They are less hardy than the heads, and will not grow well if exposed all winter to the weather.

Beginning a Garden.

If one proposes to begin gardening, whether to raise vegetables for home use or for sale, commencement should not be put off until spring. The work could have been started a month or two earlier, but much can yet be done in all but very cold localities. It is of little use to try to make a garden on wet land. Unless the soil has a natural drainage, tile or plank drains should be laid the first thing. If sod-land be selected, apply a good dressing of manure, break it up, and let it lie until spring, when another manuring and plowing, with thorough harrowing, will be needed. The success in the garden depends largely upon the amount of manure applied to it. Stable manure to the extent of 50 to 80 loads to the acre is needed, or if so much can not be obtained, the lack should be supplied by the use of ground-bone, fish-guano, superphosphate, or other good commercial fertilizer.

Wintering the Celery.

Probably more celery is injured by too much warmth than by excessive cold. While not so hardy as some vegetables, it is not injured by moderate frosts. Last month (p. 397), we described the manner of banking up that required for early use. Market gardeners sometimes leave the celery where it grew, banking it up to the tops with earth, and at the approach of severe weather, covering with leaves. There is the risk of being unable to get out the celery when wanted, when left thus, hence the crop for use in late winter is stored in trenches, where it is accessible at any time. The trenches must be where water will not settle in them, and should not be over 10 inches wide, the depth being equal to the hight of the plants. The celery is placed upright, the plants being close together, but no earth is put between them. The tops are to be covered with leaves, straw, or coarse hay, but not until the weather is likely to be severe, but the covering material should be at hand to be ready in an emergency. To avoid injury from heating, the packing in trenches is delayed as long as it is safe to do so, which, near New York, is to the end of the month. But the plants in the rows are protected by roughly earthing them up to the tops early in the month. The tops will not be injured if the thermometer falls five or six degrees below freezing, and the covering may be slight at first, to be increased as the cold is more severe, until finally it is 6 or 8 inches thick. We mentioned last month the use of boxes for storing celery in the cellar. This is a neat and ready way, but not practicable in a warm cellar. Instead of boxes, boards may be used. A row of boarding is placed 9 inches from the cellar wall, and as high as the tops of the celery; this is to be filled with the upright stalks as if it were a trench. At 9 inches from this, two more rows of boarding are set up, also 9 inches apart, forming another trench, distant from the former by its own width, this is to he filled, and so on. This will leave the celery in strips 9 inches wide, separated by spaces the same width. The spaces are to avoid the heating, which would take place if larger masses of it were placed together. If the floor of the cellar is cemented or bricked, a couple of inches of soil should be placed on it before the celery is packed. It will be necessary to use some strips or stays to hold up the boards. With a cellar bottom of earth, no soil is needed, and the boards may be held up by driving stakes. With such a mass of vegetable matter, considerable heat is given off, and free ventilation will be needed to keep the temperature low enough to prevent injury.

Making and Using Cold Frames.

A cold frame is intended to merely preserve plants during the severe weather of winter, and not for growing them. It consists of two boards running parallel about six feet apart, and nailed to posts. The rear one should be 12 in. high, and the front one 8 in., to give the sashes, which are placed lengthwise from one to the other, the right pitch. The cold frame may be of any desired length, and should be built where it can have shelter from the northwest. A high close board-fence is almost indispensable for this particular in some localities. The sashes slant to the south or southeast. The cabbage, lettuce, and cauliflower plants are first grown in the open ground and transplanted when about a month old, to the cold frames, in which they are to remain through the winter. Each sash, 6 by 3 ft., will cover 500 cabbage or cauliflower, and 800 lettuce plants. These plants are nearly hardy, and only need to be protected from sudden changes of temperature. In clear winter days the sashes may be tilted at the rear end, in order to give the plants abundant air. All the management of the cold frame must keep in view the fact that its object is not to promote growth, but to keep the plants in a perfectly dormant state. In the South, ridges of earth serve the purpose, and take the place of cold frames used in the North. If the soil in the frames is to be used for growing other plants, after the removal of the cabbage, lettuce, etc., to the open ground in spring, it should be both rich and mellow.

The Grapevine in November.

Those who have many vines, or a vineyard, will have fixed upon some method or "system" of training and pruning, which they will follow so far as the vines will allow. But we have advocated the planting of vines wherever there is soil enough for their roots, whether on the largest farm, or in the smallest village yard, and have advised their training along fences, and upon buildings, whenever there was no room for a trellis. We have advised growing grapevines in the best way, if possible, but at any rate, and under unfavorable conditions, to plant one or several vines, and do the best with it that circumstances will allow. Those who have followed our advice, will naturally ask what shall be done with their vines, now that the season for pruning is at hand. It is probable that the vine of each reader, will be unlike to, and require a different treatment from, that of every other reader. In whatever condition the vine may be, when the fruit has been gathered, and the leaves have fallen, the observance of a few simple points will allow any intelligent person to treat it properly. The vine, as one stands before it, after the leaves are off, is made up of old wood and new. The stems more than one season old, have no buds, but they bear smaller stems, that grew in the season now closing. In spring and early summer, they were green and tender, and we mentioned them as *shoots*. Now that they have ripened and are hard and brown, we call them *canes*. Every vine, large or small, is now mainly made up of these canes. There may be in a young vine but a few of them, but a large old one will show a mass of such canes. Now, however perplexed and confused an old vine may seem, it is really a repetition of the same parts. There will be some old stems, but the mass is of last summer's growth. Take one of these canes by itself, whether there are but two or three upon a young vine, or a multitude upon an old one, examine and understand it, and see what it will do next year, and its treatment will become plain. Let figure 1 represent a cane, whether the only one from a very young vine, or one of many upon an old vine. It may be but three feet long, or it may have grown to the length of 20 feet, but long or short, large or small, it will show buds on alternate sides, which are separated by a portion of stem, which is longer or shorter, according to the variety. These buds are placed at a point where the leaf of last summer was attached. Aside from the old stems, which grew a year (or several years) before, the whole vine is made up of repetitions of such canes. No matter how many they may be, or how much confused they may seem, this is all that the vine has at this season.

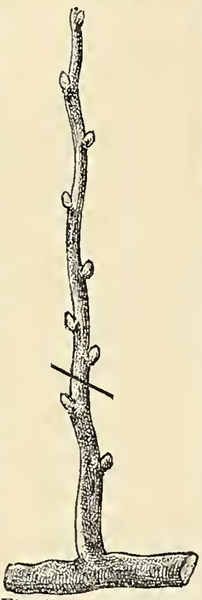


Fig. 1.—YOUNG GRAPE SHOOT.

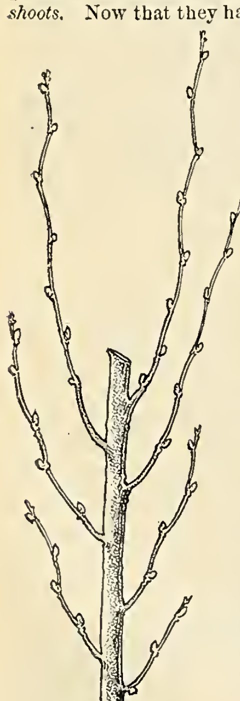


Fig. 2.—BADLY PRUNED BRANCH.

Why Do We Prune?

We would, at the risk of repetition, impress the fact that the whole vine (save the old stems,) is made up of buds, separated by sections of variable length (three inches to a foot or more) of cane. Another point important to bear in mind, is that all growth of next year, shoot, leaf, and fruit, will come from these buds, and from *nowhere else*, as a rule, though on a vigorous old vine, chance, or adventitious shoots may appear upon the stems. Unless it is desired to have a cane just there, such shoots should be broken off as they appear. It will be seen that these buds are important points, not only next year's growth, but the whole future of the vine, depends upon them. Suppose we did not prune, what would happen? If the cane, fig. 1, were left as the fall of the leaf found it, its buds would next spring push into shoots. The uppermost buds, according to a well known law of growth, would start first, and push their shoots, the next lower ones, starting later, would produce smaller shoots, and there would be a series of smaller shoots as we go down the cane, as in fig. 2, while the lowermost buds, being deprived of sap by the upper shoots, may not start at all. It will be seen that the most vigorous shoots will be from the upper buds, while the lower buds, which were formed earliest in the season, and are most likely to contain the rudiments of fruit, are quite starved and useless. Each year, if the vine goes unpruned, the new growth will be further from the root, and the best developed buds, starved, as it were, by the more rapid growth of those above them, and but very little fruit will be produced. Suppose instead of allowing the cane (fig. 1,) to go unpruned, we at this season cut it off as shown by the line, leaving but two buds. Next spring, these two, having all the nourishment that would otherwise have gone to the buds above them, will push with great vigor, and being the oldest and best developed, will probably bear fruit abundantly, and next autumn would present the appearance of fig. 3, as contrasted with that of fig. 2. We prune then, to be more sure of fruit, and to avoid growing a great number of shoots for which we have no use. We wish to direct the energies of the vine to the production of fruit, rather than to the forming of a great mass of shoots and leaves. Now if one understands this as to a single cane,

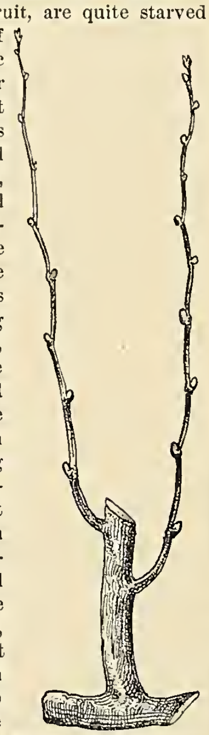


Fig. 3. WELL PRUNED BRANCH.

The Pruning of the Whole Vine is Plain.

One should use his imagination, and knowing that the future growth will come from the buds, now plainly seen, he can at a glance tell what to remove. Standing before an old vine, no matter how complicated it may seem, let him bear in mind that each bud will next spring push a leafy, and may be fruiting shoot. If there are too many canes, so many that even one or two shoots from each will cause crowding, let him cut them out altogether. Then cut the canes that are allowed to remain, back to two buds each, keeping in mind the fact that each of these two buds will produce a shoot, which next autumn will appear as a cane, just like the one he has now before him. With an old and neglected vine, we can only give these general directions, which, if intelligently followed, will produce good results. There is greater danger that too many buds will be left, than that too many will be cut away. In pruning it is rarely desirable to provide for more than two shoots from a cane, but it may be well, especially in severe climates, and to guard against accidents, to leave three or four buds in pruning at this season, and then late in February, or early in March, at any rate before the sap starts, cut away the extra buds, leaving but two to grow. An intelligent consideration of the few simple facts here stated, will allow any one to bring a neglected old vine into a fair condition of fruitfulness. The same principles apply to the treatment of young vines, but these, if our directions heretofore given from time to time have been followed, will be less perplexing to the novice.

Experiment in Cutting and Planting Potatoes.

BY HENRY E. ALVORD, OF HOUGHTON FARM.

For years past, the agricultural papers of the country have published accounts of trials with potatoes cut and planted in different ways. These tests have seldom been repeated by the same person, or carried on by persons in different places, in such a way as to be comparable, and hence have been of little value. To do this work in a thorough and systematic manner, making a careful study of the potato plant, and incidentally testing the latest proposed method of cutting seed potatoes, it was last April agreed by the N. Y. Agricultural Experiment Station and Houghton Farm (Experiment Dept.) to institute two parallel series of potato trials. The schedule was arranged for this coöperative test, and Early Rose potatoes were planted in May, in small garden plots, the seed being cut in various ways, and planted at different depths for both level and ridge culture. All were on soil in fair condition, half being manured and half unmanured. The rows were placed three feet apart, and the hills one foot apart in the rows.

On the State Farm, at Geneva, the season was favorable, and the trial progressed without accident or interruption. Accounts of the work and results there have been published in the Station Bulletins II and VII, (July 29 and Sept. 2,) to which reference is made for details. It is intended to give here only the report of results at Geneva, for comparison.

At Houghton Farm the season was unfavorable; cold and wet during the vegetating period, then hot and very dry until the potatoes were dug, the last of August. The plots were badly washed by a cold rain, and stood soaked for some days after planting. The damage was such in some rows, out of the twenty-four differently planted, that they were dropped from the record. But the facts hereafter given relate to rows so far undisturbed and of such average condition, considering the season, as to be fair samples for comparison. The results are given in tabular form as most compact. The figures are taken from twenty average hills, in rows of like treatment, manured and unmanured. The yield per acre is estimated by regarding twenty hills, as planted, as $^1/_{726}$th part of an acre.

TABLE OF RESULTS.

How Cut and Planted.	*Potatoes in 20 Hills.*	*Weight of Product, 20 Hills.*	*Estimated Yield Per Acre.*
	No.	*Lbs. Oz.*	*Bushels.*
AT HOUGHTON FARM—MANURED PLOTS.			
Single eyes, cut shallow.........	89	2 6	20¾
Single eyes, cut deep............	101	6 11½	81¼
Ordinary cutting and planting...	175	18 8	224
Whole tubers, ordinary planting	224	19 3	239¾
Potato peelings, pared close....	268	11 8	139
AT HOUGHTON FARM—UNMANURED.			
Single eyes, cut shallow........	134	2 6	20¾
Single eyes, cut deep....... ...	109	5 15	72
Ordinary cutting and planting..	192	16 13	203½
Whole tubers, ordinary planting	208	14 8	175¼
Potato peelings, pared close....	228	9 15	120¼
AT N. Y. STATE AGR'L EXPERIMENT STATION.			
Single eyes, cut shallow....	52	3 13	37¼
Single eyes, cut deep......	129	15 12¼	191
Ordinary cutting and planting..	177	16 13½	202
Whole tubers, ordinary planting	177	13 1¼	158
Potato peelings, pared close....	Not yet reported.		

The agreement in quantity and size of the product of ordinary cutting and planting in the three cases above, is very striking; the disagreement in

other results equally so! At the State Station, the ordinary method produced the largest gross yield, but considering the size of the potatoes, the seed cut deep, single eyes, gave the best result. At Houghton Farm, the ordinary method stood well ahead, on the unmanured land; on the manured plots, the whole potatoes as seed gave the greatest weight, but considering the size, the ordinary cutting gave the best result there also. At the State Station, single eyes, cut deep, did very much better than whole potatoes; at Houghton Farm, exactly the reverse appears, the product of whole seed, in number and in weight, on both manured and unmanured land, being double that of the deep cut, single eyes. There is nothing to reconcile or explain this great difference.

In Bulletin VII, from Geneva, the following comment is made upon the facts reported: "Further trials are required before we can eliminate the effect of the soil in order to determine the influence of the cutting of the seed as a factor of determinate value. We can but claim at present that we have obtained strong indications of the value of a method, easy of application, and seems potent for influencing quality and yield." This view was justified by the record, provided the average size of the tubers was regarded as more important than gross product. At Houghton Farm, the potatoes were not classified as "merchantable" and "small," because the question, What is a merchantable potato? at once arose; it seemed better to rely upon recorded facts than permit opinion to modify them.

The only comment possible on the Houghton Farm results, is that nothing has been found better than "ordinary cutting and planting"; a medium-sized whole potato being the next best seed.

These combined trials, with their contradictions, serve mainly to show that no conclusion is admissible from one year's work in agricultural experiments. Those who are waiting and watching must be patient with the experimenters. Trials like these must be repeated, and results compared and verified, until the elements of error can be overcome. A preliminary report like this merely exhibits its own weakness, and serves to emphasize these truths. All the labor and cost of a season's work may bring no result, except forming a part of the final record. No single year of field experimentation can be depended upon to establish a single fact. One swallow does not make a summer.

Rose Growing in the Window.

Probably the majority of those who have had no experience, if asked which flower they would select for window culture would answer, "The Rose." Hardly another can be selected that will ordinarily cause so much disappointment, and as a rule we rarely see a good specimen in a window, even where geraniums and other plants are flourishing. The chief causes of these failures are: Starting with the wrong varieties and expecting too much of them. Those best suited for windows are those known as Bengal or China roses. They bloom more frequently than any others, and are often called "Monthly" or "Daily" Roses. With fairly good treatment, they will produce flowers, not very large, nor as a rule fragrant, but they are roses. For fragrance, we must take some of the more easily managed Tea Roses, those which will succeed with proper care. In saying that one cause of failure is expecting too much from the rose, we have reference to the too common treatment they receive. When planted out in the garden, they bloom more or less all summer, and especially during the early autumn. They are taken up at the approach of frost, potted, taken to the house, and expected to bloom all winter. They will not do it. They must have a season of rest after being disturbed, and if they recover and produce flowers by spring it is all that can be expected. Those who wish roses for the window should keep them in pots all summer, plunging them in the soil up to the edge of the pot. In September, they may be repotted, pruned quite severely, and kept in a partially shaded place until they have become established. When taken in, place them first in a room where the windows can be opened every mild day, and thus gradually accustom them to the change. But many would like to cultivate roses who have none in the garden, and must begin anew. Such should procure of the florist plants he has prepared for winter blooming, and which have not been at all forced. Prefer plants that have not yet bloomed, and all the better if they have no buds.

Of the Bengal Roses, probably *Agrippina* is the best; it is one of the most generally grown, and produces its dark-crimson flowers very freely. *Louis Philippe* is another good crimson. Of the blush sorts, *Mrs. Bosanquet*, and *Daily Blush; Daily White* is a good white variety.

Among the Tea Roses, *Clara Sylvain* (a cross between a Tea and Bengal) is a fine white; *Safrano*, fine apricot yellow; *Le Pactole*, canary yellow; *Bon Silene*, rich salmon pink. The Tea Roses as a rule are more beautiful in the bud than when open.

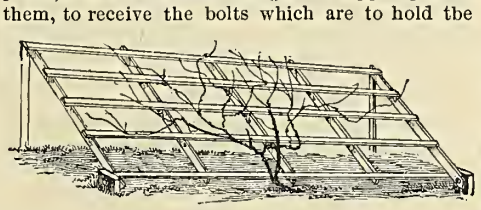
Good loam mixed with old cow manure makes a good soil for roses, but any soil that is not too stiff will do, as manure can be supplied in the form of liquid. Do not over water; better let the leaves flag once in a while than to keep the soil too wet. Give liquid manure (made from cow dung), as weak as tea in color, only when the plants are growing. Shower now and then to remove dust. The Green Fly is the most common insect in the house; for those, shower or dip the plant in tobacco-water. When a shoot has bloomed, cut it back to a strong bud, and another will soon appear.

A Convenient Grape Trellis.

E. E. REXFORD, WIS.

One who has grown grapes, or any other vine which has to be laid down in fall, and covered, to enable it to stand our winters at the North, knows what a task it is to do the work properly. The summer's growth has to be untangled from about the pillars or wires over which it has clambered, and very often a large share of the vine is cut off, as the quickest and easiest way out of the difficulty.

For some three years past, I have used the trellis described below, and have found it to be "just the thing." When the time comes to cover the vines, I remove the support of the trellis, and lay it flat on the ground. The vines do not have to be disturbed at all. In spring, when the covering is removed, the trellis is raised, and the supports put in place. There is no tying up of vines or branches with this trellis, consequently a saving of time, labor, and vexation. This trellis can be made to stand perpendicular or slanting, by changing the position of the posts supporting it. Take two pieces of plank, and bore holes through the upper part of them, to receive the bolts which are to hold the



A HINGED GRAPE TRELLIS.

trellis in place. Drive these pieces into the ground, as far apart as the trellis is long. The trellis can be made of any convenient size, and consists simply of five stout pieces of wood, nailed firmly together with long cross-strips, to furnish support for the vines. At the bottom of the end pieces, bore two holes to correspond with those in the pieces of plank, and put an iron bolt, fastening with a nut, through these end pieces and the planks, thus making a hinge upon which the trellis can be made to move easily. This trellis is so simple, that any man can make one in a short time.

[Of course a trellis of this kind can only be useful while the vine is young and flexible. As it becomes older, it will be more difficult to bend it down, but as the vine gets age the necessity for protecting it will diminish, as it will either become acclimated or prove to be too tender for the locality in which it has been growing.—ED.]

Fifty Thousand More.

At no period since the flush times immediately following the war, have the additions to our Subscription List been so large as at the present time. Every mail which now reaches us brings new names from all quarters of the country, and our most sanguine expectations are being realized. During the next few months we shall certainly add no less than Fifty Thousand recruits to our army of subscribers. We hope every one of our old friends will enlist for another year, and bring fresh accessions with them. Renew your subscription now, without waiting until the end of the year, so that your name may be immediately entered on our books. Forward your subscription To-day.

Study the Farm Animals.

When a Menageric or Show of wild animals comes into a neighborhood, the boys are all wide awake over the matter; even the "older boys" find an excuse for going to the show, in the fact that it is instructive and allows them to see the animals belonging to Asia, Africa, and other parts of the world. A collection of wild beasts is interesting and instructive, but not more so than those that are to be daily seen at home. Every farm has a greater or less number of animals, which are quite as interesting as those in the menagerie. It is well to see and learn the difference between the Elephant of Asia and the African Elephant, and to see the Tapir, a sort of small edition of the Elephant, which looks as if it were waiting for its long snout to grow into a trunk. It is interesting to know that these animals, the Elephant and the Tapir, are related and belong to the order of *Pachyderms*, or thick-skinned creatures, and to compare these with the Rhinoceros. But how about those pachyderms at home in the pen? The Pigs that one daily feeds are quite as interesting as the Tapir or Peccary. Where did they come from, and how have they changed from the wild form? It is interesting to see the Sacred or Brahmin Bull, with a big lump on its back. But how about the old Cows at home? Did they originally have humps? or did they come from some other race of wild cattle? The Zebras are like small horses, and beautifully striped. Are they related to old "Jack" and "Charlie," that are worked every day? It is well to improve the opportunity that the menagerie affords us for adding to our knowledge of the animals of far-off countries, but do not let the interest in them stop with these. Every Fair held this autumn presented a collection of brutes quite as worthy of study as those in any menagerie. Farm-life affords a vast number of interesting subjects for study, among which none are more attractive than the tracing out of the life history of our domestic animals, to learn where they originated, and how they differ from the animals in the wild state. If the studies of young men could be in some manner directed to the things common to their daily lives, we should have much less upon that important subject, "How to Keep Boys on the Farm."

Do the Fairs Pay?—The new ideas gathered—we might say harvested—at the annual exhibitions are good seeds that often fall on rich ground, and spring up to the honor of all who have aided in making the fair a success. The Agricultural Exhibitions have laid the foundations of social and esthetic improvement, which are manifest in every home whose inmates are leaders in the various departments of the town or county fair. It is hoped that no opportunity has been lost to profit by a day of sight-seeing, social intercourse, and study of the various new and improved implements, fruits, farm animals, etc., that should be found on the grounds of every well conducted agricultural fair. If not too late, go once more to some exhibition before the season of fairs closes for the year.

"Ennobling" of Grade Stock.

BY COL. M. C. WELD.

In the use of the word "ennobling," I give an English equivalent of a well-known German expression as applied to the improvement which breeding produces in both plants and animals. As our Herd-books are conducted, no amount of crossing with recorded sires will wipe out the stains of plebeian blood. We can point to Grade Jerseys which are known to have only an hundred and twenty-eighth of common blood, and yet are grades, and must continue to be; and their progeny can not be recorded. This is the seventh generation from the scrub or common cow. It is quite likely that there may be a few grades of even higher blood than this. The eighth cross represents only one two hundred and fifty-sixth of common blood. Thus:

The 1st cross is $^1/_2$ pure, and $^1/_2$ common blood.
The 2d cross is $^3/_4$ pure, and $^1/_4$ common blood.
The 3d cross is $^7/_8$ pure, and $^1/_8$ common blood.
The 4th cross is $^{15}/_{16}$ pure, and $^1/_{16}$ common blood.
The 5th cross is $^{31}/_{32}$ pure, and $^1/_{32}$ common blood.
The 6th cross is $^{63}/_{64}$ pure, and $^1/_{64}$ common blood.
The 7th cross is $^{127}/_{128}$ pure, and $^1/_{128}$ common blood.
The 8th cross is $^{255}/_{256}$ pure, and $^1/_{256}$ common blood.

Such an animal is for all useful purposes pure-blooded, and if the blood be really good, the sires well selected, and the dams good, it will be better to breed from—a better type of the breed, whatever that may be, than the common run of perfectly pure animals raised away from the natural home of the breed.—The English Shorthorn Herd-book records any cow which shows in her pedigree five crosses of recorded bulls. In such a case every sire for five generations must be given, with name and number, and we presume the breeder must be able and ready to exhibit his private herd register in which the dates of service and birth are kept, with descriptions of the marks or distinguishing features of the animals. The starting point, however, among English Shorthorn breeders can not well be a scrub or mongrel of mixed blood, as it might be with us, for the breeding starts with a well-bred "common cow"—a cow without a pedigree, but with all the evidences of blood that a high grade has with us, and in fact she would be of just as good, or perhaps even better blood than the foundation stock from which sprung, by good breeding, the Shorthorns, or "Improved Shorthorns," as they used to be called. Hence it follows that, should we in this country admit such high grade animals to record, and regard them as to all intents and purposes pure, it would be necessary to add several generations to the number deemed sufficient in breeding up from "common cows" in England.

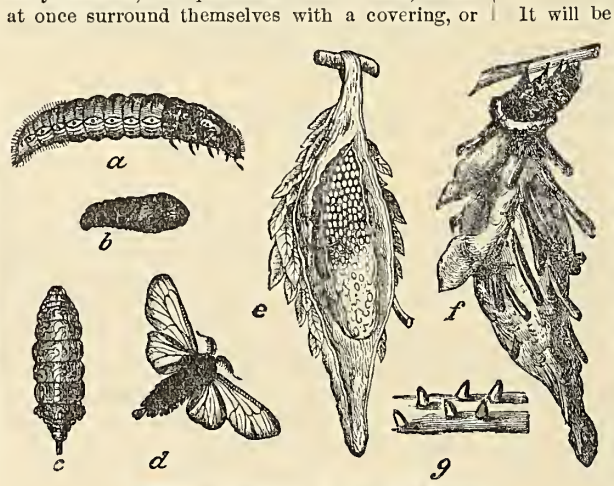
This whole subject was thoroughly discussed by the Shorthorn breeders several years ago, and, if I remember rightly, considerable acrimony (perhaps it might be called frictional electricity) was developed. So far as we know, the subject has hardly been discussed by the breeders of other kinds of cattle, and though a few years ago it seemed as if it might for several reasons be really worth while to record such animals, times have now changed, and it seems the rather preferable to devise some way of excluding from the records many animals of undoubted purity of blood, but of individual inferiority.

The facts which argue in favor of opening the records to high grades are: 1st, that by so doing many breeders who are now without hope of ever getting their herds recorded, would begin at once to breed with care, and to keep accurate pedigrees. 2d, it would cause a demand for bull calves, and a much more general use of thoroughbred sires.

The more people study pedigrees, the more they see the worthlessness of many, and the great value of a few; and yet, for us with grade cows, the poorest, healthy, thoroughbred bull is likely, nay almost certain, to produce better results than any grade, for one is not likely to find grades of $^{127}/_{128}$th, or even of the fifth generation, ($^{31}/_{32}$ds.) The talk among Shorthorn men about "17s" and "American Woods," and all that, indicates that "short pedigrees," or long ones originating in this country, though in the Herd-book, would find no favor here, either in this or other breeds. I firmly believe that the life of a breed, away from its birth place, is comparatively short, and to maintain strong race characteristics, it is necessary to refresh the blood by occasional strains from the fountain head.

The Bag-Worm or Basket-Worm.

One of the most interesting of the injurious insects of the farm and garden, is the Bag-worm (*Thyridopteryx ephemeræformis*). The engraving shows this pest in the various stages of development. The methods by which insects protect themselves are numerous. Some form large webs under which many "worms" live together, others live in the interior of vegetable substances, and the skin of the fruit, or the cuticle of the leaf serves as a protection. Silk is the most common material used, and is spun into many forms. The bags of the Bag-worm are most conspicuous in the winter, when the foliage is not upon the trees. Many of these bags are empty, while others contain a number of soft yellow eggs. The empty bags are of the male insects, those with eggs were made by the females. A female bag is shown at *e*, with the cluster of eggs in the center. The eggs hatch in early summer, and produce brown worms, which at once surround themselves with a covering, or



DIFFERENT STATES OF THE BAG-WORM.

"bag" as it is termed, as at *g*. As the worms grow, the bags grow heavy and hang downward; when full-grown, they have the size, position, and general appearance as shown at *f*. Should the worm be pulled from its casement, it would appear as at *a*, the protected part of the body being reddish and soft, while the exposed portion is hard and dark-colored. The worms close their bags, and stop feeding for a few days, at four different times, for the purpose of casting their skins. At the close of the feeding season, they fasten their bags to twigs by a strong silken band, afterwards cover the interior with soft silk, turn with their heads towards the lower end, and become chrysalids. The form of the insect in this inactive state is shown at *b*. Three weeks after, the skin of the male chrysalis breaks, and the moth, *d*, escapes. The female, *c*, has no wings, and never leaves the shell until after depositing her eggs, when she drops exhausted to the ground. The bag-worm feeds upon many evergreen and deciduous trees. It is particularly fond of the Arbor Vitæ, and many complaints have come from its destructive work upon hedges of this evergreen. From a knowledge of the habits of this insect, it is obvious that by picking off and burning the bags in winter, the pest can be destroyed. This is quick work when the bags are few. The worms are so perfectly encased, that birds are not tempted to eat them, and the application of poison to trees and hedges, is not an easy matter.

Dakota Rocks and Crops.—"M. W. P.," Sioux Falls, sends us a specimen of Jasper Rock, the discovery of which excites much interest in the locality. The stone is known to geologists as "Jasper Rock," and is really a coarse kind of that red form of quartz, called Jasper. The value of the rock will depend upon the ease with which it may be quarried and converted into building stone. If in solid masses, like granite, its application will be limited. As it takes a fine polish, it will be useful for table-tops, mantel-pieces, monuments, etc. Our friend is in high glee over the crops, especially the potatoes, which, he says, is the largest ever raised. They fairly crack open the ground, and will yield from 200 to 300 bushels to the acre.

Bee Notes for November.

A subscriber asks if sugar can be safely fed to bees in winter. There is no other food so good for bees as pure sugar. The granulated form is best. All bee-keepers that have fed this sugar for winter stores are agreed that it is even superior to honey for bees. This is owing, doubtless, to its composition, as it contains more cane sugar, and also to the absence of pollen, which is to be found in all honey. While pollen generally does no harm to bees, in winter, it is not good in some cases and may be the cause of fatal dysentery. Dissolve the sugar for feeding in an equal bulk of water, and heat until it boils, and when cold it is ready to feed.

Bees in Winter Quarters.

It will be remembered that many bees were lost during the winter of 1880–81, from neglect. They were caught by the exceptionally early season. They need at least 30 pounds of good food per hive, and they should be crowded upon just enough frames to contain them, by using division boards. If the bees are to be packed, this should be done as early as October 1st, and if chaff hives are used, the packing above and at the ends of the frames should be added at the same time. It is always best to have the fine chaff or sawdust in sacks. However we winter, whether in chaff hives, or in the common hives with chaff packing, or in cellars, it will always pay to pack above and at the sides of the frames. The hives should be put into the cellar as early as November 1st, before the severe weather sets in. The hives should be dry when set in, and, in the removal, disturb the bees as little as possible. When in the cellar, remove the tops of the hives, but not the chaff pillow. The entrance should be left open.

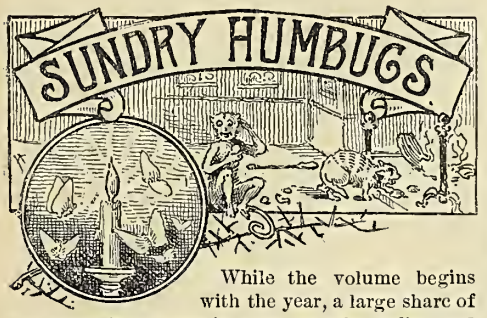
Shipping Queens.

It will be remembered that the shipping of queen bees by mail was prohibited by the Postal authorities until two years ago, when it was allowed, to the great advantage of bee-keepers. Thousands of queens are now yearly sent by mail, and at very small cost. A queen may be sent from Maine to California for two cents. In granting the request, two conditions were required. First, the food must be candy, or some substance that could not possibly soil the mail, and second, the cages should be so made that no mail agent could be stung. The last requisite is easily met in the double faced cages now universally used. The former was found more difficult. Candy is so dry that, if the bees are sent far, they are very apt to die. Small tin vials of water have been added, with a very small hole from which the bees can sip. This did not violate the spirit of the law, as there were but a few drops of water in the vial, and this could not leak out of the small hole. But this method was not wholly satisfactory. Too often the queens died, if sent long distances. Within the last year a food has been made that is every way satisfactory. Granulated sugar is covered with extracted honey and, after draining for two days, the sugar is packed into a hole in the cage. This does not soil the bees, is moist, and serves for the bees for many days, so that often, after a long journey by mail, there will not be a single worker bee dead in the cage.

The Surplus Honey.

Let all remember to keep their honey, whether extracted or comb, in a dry warm room. It is best

to keep the extracted honey in open vessels, and if to be shipped, in harrels or kegs, tbese latter should be coated inside with parafine, or beeswax. Let no one be in a hurry to sell his honey. It should be thoroughly graded before it is sent to market. No pains should be spared to have the honey look neat, which will largely increase tbe price it will bring. In some parts of the country, tbe crop has been very good, in many others it is a total failure. It is to be expected that good prices will prevail.



While the volume begins with the year, a large share of new subscribers come in some months earlier, and this seems a proper time to say a word about these columns and their objects. In the early years of the *American Agriculturist*, a fraudulent scheme was often exposed as "A Humbug." In the course of time, when it became necessary to group several such under one head, they were given as "Sundry Humbugs," the present convenient title.

Do not Give Your Signature.

The very first letter in our budget for this month has reference to note giving, but in this instance the note is given, knowing it to be a note. "J. H. P." writes us, from Darke County, Ohio, that his is an exclusively agricultural community, the farmers having large barns and broad-roofed houses, but as there are no coal mines they know little about gas and gas-tar. He says that parties come into a neighborhood proposing to paint the roofs of the farmers' barns and houses with a paint, the ingredients of which are described in technical terms, and referring to men who are seeking political popularity. Many agree to have their roofs painted in two coats at the rate of $1.50 per square (10 by 10 feet), a note for tbe amount to be given when one coat is applied. Mr. P. says that the men come, mount the roof, and that with their brushes they paint 64 squares in half a day. He states that this remarkable roof paint

Is Nothing but Coal-Tar,

a substance that he became familiar with elsewhere. Moreover, after putting on one coat, and getting the note, the "men are heard from no more, but the notes are." The nearest bank held them, and in due time called for payment. We doubt the propriety of coating roofs with coal-tar at all, but if one wishes to do so, he ought not to purchase it at an outrageous price, with a high-sounding name, as somebody's "Roof-Paint."

Fashions are said to move in cycles, and it would appear that humbugs revolve in a similar manner. Here turns up the antiquated

"Golden Butter Compound,"

with all the freshness of a novelty. We had not before seen it for several years; now a friend in Maryland has received a circular. We exposed this nonsense years ago, and now can only say—Don't....Nothing is more surprising to us than

Swindles in Silverware.

A friend in Kentucky who has received a remarkable circular from a Boston concern, is disposed to regard it as a humbug, but asks our opinion. If some one should offer our Kentuckian a lot of flour at one-half or one-quarter the market price, he would conclude either that the party had not paid for the flour or it must be of a very poor quality. These Boston folks offer for $3.25, silverware which they say is "usually sold for $8 to $12." Silverware, if "solid" has the value of its weight in coin, with the cost of manufacture added. If "plated," its value depends entirely upon the reputation of the maker. The body of the ware is of some cheap metal with a covering, or plating of silver. The plating may be thick enough to allow of several years' wear, or it may be a film so thin that its thickness (or thinness) can not be expressed. The good and the bad look alike; there is no way of knowing about plated-ware, save the word of the maker. As no one engaged in raising tobacco, wheat, or other staple ever, as a business, sells it for less than it is worth; our Kentucky friend may be sure silverware is no exception to the rule. If offered at half or quarter the usual price, it is doubtless so much the poorer. People in Massachusetts no more than in Kentucky, ever, as a matter of business, give more than a dollar's worth of silver-plate for a dollar.

Wonderful Cheap Guns.

There was a run of these wonderful things a few years ago, and aside from tbe fact that the "shooting irons" were worthless in themselves, those who sent their money did not get the trash that was offered. We call them "mongrel," for though "breech-loaders," those we have seen were made from some unsalable revolvers by adding a barrel at one end or a stock at the other, making a thing that was "neither fish, flesh, or good red herring." If one wants a good revolver, rifle, or shotgun, let him get one, but to buy these mongrel things is money thrown away. These so-called guns are now being offered, proposing to send for $6 or $7.50, a gun equal to those costing $100. They are advertised in much the same style as were those of a few years ago, and will no doubt subside as did their predecessors.

A Subscription Fraud—Look out for Him.

One of our subscribers at St. Thomas, Canada, writes us that a good looking man (they are always good looking and well dressed) with a wooden leg, is taking subscriptions for various newspapers and giving receipts for the same, signing the name of the firm or party publishing the paper. He is the worst kind of a swindler, besides being a forger, as the parties whose receipts were used by him say that the signature is a forgery, and that they employ no wooden-legged men or thieves in their business.

Another Correspondent

writes us that he sent in response to a glowing New York City advertisement, $5 to pay for some of the goods advertised therein. He never received the goods, and wished us to look the parties up and get his money for him. He sent us an order on them for the amount, but he might as well have sent us a Deed for "Lots in the Moon," as we should have about as good a prospect of finding them, as of finding the firm he would have us look for. Moral.—Avoid all the flashy advertisements you see, as they are only a net spread to catch the unwary.

Still Another

complaint comes from Glens Falls in this State, and encloses an advertisement of a would-be Gent's Furnishing House, situated (or supposed to be) in the immediate neighborhood of this office. We would say to our friend that it is only an old swindle under a new name. There is no such store as the company advertise, and any one who sends to this man, whose name begins with R and is spelled with four syllables, $9 for six shirts and expects to receive them, will die of old age before they arrive.

Procuring Pensions.

The Fitzgeralds and the Fitzgeralds.

The following are among the communications received in response to our inquiries regarding the various branches of the Fitzgerald family, who advertise themselves as Pension Agents.

No. 1.—HONEST AND NOT CONNECTED WITH THE SHOPS OVER THE WAY.

N. W. Fitzgerald & Co., Attorneys and Counsellors at Law, and Solicitors of Claims and Patents, write us from Washington: "So far as this firm is concerned, we desire to inform you we have been engaged in Pension Business more or less since 1865 . . . We have treated our clients fairly and justly, and we are willing they should testify. . . . We are responsible for all our contracts; we pay our debts, and do as we would wish to be done by. We have no connection with any other person of this name in Washington, Ohio, Indiana, Kansas, or elsewhere; in all these places named are persons by this name who are doing Pension Business. . . . The individual members of this firm are N. W. Fitzgerald and S. C. Fitzgerald. . . . We hope this will be sufficient so far as this firm is concerned."

No. 2.—MONEY FOR POSTAGE STAMPS WANTED.

T. Lyman Newell writes from Russell, Lake Co., Ill., inclosing several documents from N. W. Fitzgerald, of Washington, D. C., and expressing himself in this wise:

"I read your remarks in the May number on the Fitzgeralds, and will send you papers I found laid away. After writing back and forth a short time, they wanted two dollars or more to pay postage and other small incidentals. I sent it, and here is their receipt. I never had another letter until this February, nearly two years, when they or he wrote me a lovely, a very kind letter, asking me for balance due, $8.00, and my claim should he prosecuted to the end to my satisfaction. Two dollars was enough for me. I received my pension more than a year ago from Mr. Bentley."

No. 3.—A "DEAD" REFERENCE.

Mr. R. Hunter writes from Bellwood, Blair Co., Penn., as follows:

"I wrote to P. H. Fitzgerald & Co., Claim Agents, at Indianapolis, and placed a pension claim in their hands. He wrote and wrote until I sent him $10.00, then he ceased to write. It was one year ago the 18th of this month. I have heard but once or twice from him. I have written to have my claim transferred, but have received no answer yet. I wrote to one of his references, but Fitzgerald 'lifted' the letter, and wrote back that the man was dead."

No. 4.—A CLERGYMAN SEEKING INFORMATION.

Rev. S. B. Nelson, Pastor of the Presbyterian Church at Waterloo, Nebraska, writes:

"I would like to have you inform me if Fitzgerald & Co., Pension Agents, of Washington, D. C., are reliable. I have been corresponding with them, and have some doubts that they are frauds."

No. 5.—PROMPT WORK WANTED.

John B. Gowdey, Redfield, Iowa, writes:

"I employed N. W. Fitzgerald & Co., of Washington, D. C., Lock Box 588, to get my pension increased. My understanding was that I was to pay $10.00 when that was accomplished. They first sent for 30 cents in stamps for postage, which I sent them; then they sent for $3.00 for incidentals—I sent that; then they sent for the other $7.00 if I wanted prompt work done. I wrote to them that I would pay the balance when my pension was increased. I have not heard from them since."

No. 6.—TAKING THE BREAD FROM HIS FAMILY'S MOUTH.

Uriah H. Owing, Kansas City, Mo., writes:

"I employed N. W. Fitzgerald & Co., Washington, D. C., two years ago. I paid him in advance to prosecute my claim to the final issue. I have the receipt for the money I paid him. When I first employed him it was N. W. Fitzgerald; now he puts it N. W. Fitzgerald & Co. I have almost taken the bread out of my family's mouth to pay him, and he will not answer any of my letters. I only hear from him through the advertisements in the paper. If you can do anything in finding out something about it for me, you shall be awarded. Please drop a poor Union soldier a few hints in regard to the matter. I send you one of his cards with his address."

No. 7.—SPEAKS FOR ITSELF.

"LANDSDOWNE FARM, LAWRENCE, Ind.

Editor American Agriculturist—DEAR SIR: In 'Sundry Humbugs' for May, I notice you ask for information in regard to the Fitzgeralds. I can give you some information in regard to P. H. of that tribe of Pension Agents who has lately moved from Indianapolis to Washington, D. C. I have taken occasion to call on the U. S. Attorney for this district, who cites me one case of his rascality, and referred me to the Prosecuting Attorney of Miami Co., Ohio, for others. The case that he knew of was this: Two swindlers sold a farmer a patent right for his county, and took his receipt for the churn or pump, or whatever it might be, which of course was a note for $700. Along comes P. H. Fitzgerald with the note, which the farmer refuses to pay. Luckily, the first party are caught in another act, and on the trial the evidence of collusion was so strong that Fitzgerald barely escaped the penitentiary. He has also been accused of extorting an illegal fee in pension cases. A. F. Broomhall, an attorney of Troy, Ohio, can give you a detailed account of his violations of law. I consider your 'Humbug' columns worth thousands of dollars to the farming community. Very truly yours, H. T. FLETCHER."

No. 8.—A DISGUSTED MEMBER OF COMPANY I.

"HUBBARDSTON, Michigan.

DEAR SIR:—About two years ago P. H. Fitzgerald & Co., of Indianapolis led me to believe that I was entitled to extra bounty, and forwarded to me papers to be made out, and to accompany which were required my discharge papers. After waiting until disgusted, I wrote them. Then they sent another set of meaningless papers (as I now believe) to be filled out and sworn to, which were doubtless intended to keep me quiet, as I requested the immediate return of my papers. Can any means be taken to recover them? A. V. PHISTER, Co. I, 3rd N. Y. Inf. and 195th N. Y. Inf."

Permanent Meadows, Seeding, Etc.

BY COL. F. D. CURTIS.

The grass crop is a most important one, though comparatively little pains is taken with it. It is generally put in as secondary to the grain crop, the land being prepared with reference to the latter. On this account much of the seed is lost, as the ground is usually rough and full of clods, which unfit it for the more delicate grass seeds. The system of manuring usually practised is not adapted to give the grass seed a vigorous start, a very important point, and without which very often a seeding fails. Unless the roots of both clover and timothy, and especially the latter, have a good hold in the soil, they are liable to dry up after the grain crop is removed, and if they survive this exposure, they are quite likely to be thrown out by the winter's freezing, or damaged during the ensuing season.

Rye and wheat being more open in their growth, and thereby admitting more light and moisture, are better adapted for seeding than any other grain. Barley is the next best grain to seed with, because of its similarity in growth to rye and wheat. Large areas are seeded with oats, which make such a dense growth that, if the grass seed grows at all, it is exceedingly weak in both stem and root. When the oats are removed, the scorching rays of the sun cause the surface of the earth to dry out rapidly.

The aggregate loss to farmers in seeding amounts to a large sum. If farmers would accept the conclusion that a good grass catch is just as important, if not more so, than a crop of oats, different results might be expected. Let the grass crop be made the primary one, and there would be a new basis which would change results. The land should also be prepared to meet the conditions of the grass seed. It must be made mellow on the surface, so that the delicate rootlets can readily penetrate into the soil. The manure should also be spread on the surface, and well mixed with the earth. It should be rotted so that this can be done thoroughly; or if in a green state, it should be free from coarse material, which is unfitted for fine seeds. Clear dung is specially suited to grass seeds, as it will retain moisture well, and has a lasting effect in the soil. I once seeded a portion of a field with clover where a liberal dressing of clear sheep manure was harrowed in, which strengthened the growth of the clover to such an extent, that it afforded a bountiful crop for years. At one time, not having manure enough to cover a field all over when it was sown with wheat, the unmanured portion was left until the early part of winter, and clear cow dung was drawn out and scattered on the snow over the wheat. The field was a side hill, but nevertheless the manure found its way to the roots of the wheat and grass, and a fine crop was harvested. This experiment disposed of the notion that manure on the surface of a side hill goes to waste, and also demonstrated the beneficial effects of surface manuring. This year, being the second cropping of clover and timothy on this land, it has produced four large loads to the acre, and bids fair to yield heavy succeeding crops. Too little grass seed is usually sown. A large amount is wasted by the rough and unsuitable manner in which the ground is prepared. This is one of the greatest drawbacks to success in seeding. The ground should be pulverized to a fine tilth, and, if necessary, the clods should be gathered up and removed from the land. There is an implement made especially to gather these clods into heaps, when they can be carted away to the barnyard or compost heap. A roller is a great friend to grass seed, and performs a necessary work to firm or press the ground into close contact with the seeds, making the plants less liable to be thrown out by freezing.

A Substantial Farm Gate.

Mr. John J. Springer, Rush Co., Ind., describes his farm gate as follows: "The sill *a*, figure 1, is an 8 by 8 piece of timber, 18 feet long, with mortises for the posts and braces. The posts, *b*, *c*, are 6 by 6 inches, and 6 feet long. The latch post has a "drop" cut in it for the latch. The sill rests upon two cross sills six feet long, placed a little to one side of the bottom of the posts. The gate posts are braced to those cross sills as shown in figure 2. This makes a stout and handy gate, that will not sag. The latch handle is so arranged that the gate may be opened by a person on horseback. The spring for the latch may be made of hickory or locust.

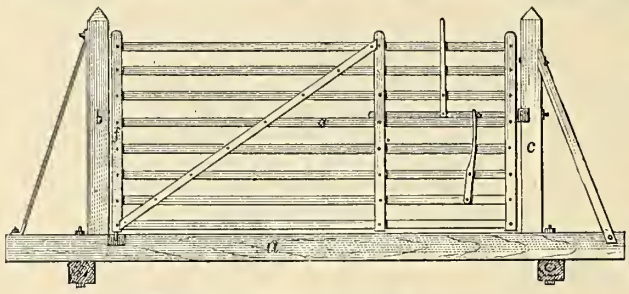


Fig. 1.—A WELL BUILT FARM GATE.

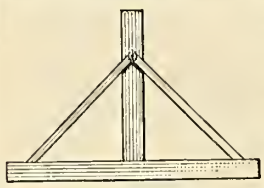


Fig. 2.—METHOD OF BRACING A GATE.

Saving Seed Pays.

There is money in it. We have proved the value of home-grown seeds for many years. Pedigree pays as well in seeds as it does in cattle, or in man. The only way to have a good pedigree, is to raise the seed yourself, or secure it from some neighbor or seedsman, who has a reputation to lose. If you are a careful cultivator and have cultivated a particular kind of field-corn for a dozen years or more, selecting the best ears from the most fruitful stalks, while they stood in the field, and kept the corn improving from year to year, you have corn with a pedigree, and it can hardly fail to give a better crop next year than any seed corn you can buy, far or near. Farmers are too apt to be careless in this matter, and wait until planting time before they secure their seed They then go to the nearest country store and take what they can get, not infrequently old seed papers mixed up with new. You will notice that packages of seed sold in such stores are seldom dated, so that the purchaser has no clew to their age, until he tests them in the field or garden, and finds them a fraud. The best season of planting most seeds is short, and great loss comes of using old seed, either by total failure of crop, or the increased labor of replanting. Ordinarily, a thrifty farmer can raise nearly all the seeds of the crops grown upon his farm and garden, cheaper than he can buy them, and of much better quality. This will be worth a good deal to him, not only in saving the outlay for seeds, but in the increased productiveness of the crops planted, and in the habits of close observation which it will secure for all other farm operations. In seed-growing, as in all other operations relating to cultivation, common sense must be used. Whoever grows four or six kinds of squashes or of melons in the same patch, should know that the seeds from these will be badly mixed. If used, the product may be of value, but the chances are that such seeds will bring a crop of mongrels not worth growing. In advising the raising of seeds, we also advise the use of proper caution. Those who closely observe, will see where they can avoid the admixture and secure a supply of seeds true to their kind. Growing seed that you are willing to plant yourself, and on which the profit of the year must depend, is an eye-opener, good for all cultivators. Therefore we exhort for the hundredth time, with all long-suffering and patience, grow your own seed and gather it in due season, label it with date, and store it for next spring's use. Failing in this, send to some reliable seedsman for a full assortment of whatever is lacking, and have it where you can put your hand on it by Jan. 1, 1883. It will pay large interest on the investment. C.

The Unnecessary Waste.

It is our custom to go twice or thrice a week through the streets in which the produce commission merchants mostly congregate. We do this that we may keep "the run of the market," and while we do not regularly report our visits, many hints are gathered which are ultimately useful to our readers. It is evident that many novices are sending their crops of vegetables and fruits to market. These unfortunates have not yet learned that to produce crops is one thing; to sell them is quite another thing, and a most important one, so far as their success is concerned. It makes one's heart sick to go through the markets and see the vast amount of stuff exposed that, instead of bringing the shipper any returns, cannot possibly pay its freight. Of course, these shippers will blame their commission man, and change to another, to meet with like results. Leaving out of question the crates of over-ripe cucumbers, partly decayed peas and string beans of the earlier season, which at their first arrival were only fit for the garbage dump. We notice a few things that were recently seen. The impression seems to be common with those who in more Southern localities send produce to market, that *anything* will sell in New York. While some few very early products may bring a high price, even when carelessly sent, there is no place where the *appearance* and condition of produce so much affects its sale as in New York. Unless one conforms to the customs in putting up and packing his produce, he had better keep it at home and feed it to the pigs. Lima Beans, for example, are sold in the

market mostly in the pods in bushel bags. Some of the market people occupy their leisure in shelling them, and offer them for sale in the shelled state. Some grower, who probably had seen the shelled beans on sale, had his shelled at home and sent to market! Such a sorry-looking, bruised lot they were! But from being so close together in a half-barrel, they had already begun to mould, when received. Although the commission men spread them to prevent heating and further moulding, it did no good, as they dried and shrivelled, and were only fit for the garbage dump. Tomatoes are often put into half-barrels or large boxes, in a condition fit for the kitchen. If they are not thrown out by the way, they are utterly useless when they reach the city; sent thus they only entail expense upon the raiser. Wherever one turns in the market, he sees waste, and cannot help a feeling of pity for those upon whom the loss must fall—the producers. If these producers had proper knowledge of their business, and a little common sense, this distressing exhibition of waste and loss at the markets would be avoided.

Ashes—Leached and Unleached.

Without going into a discussion of the composition of wood ashes, it is sufficient for us to remember that they consist of elements of the soil which were essential to the trees of which they formed a part, and that all our common farm crops draw from the soil the same elements in differing proportions. When we apply ashes to the soil we furnish the plants the very elements of food which they need in an easily accessible form. Ashes act promptly, and upon many soils their effects are perceptible for a long series of years. The more soluble parts of the ashes, especially the potash, act most promptly, while the less soluble parts continue to yield more or less nutriment as they are gradually dissolved.

The application of unleached ashes in large quantities upon light sandy or calcareous soils is not economical, because the soluble and most valuable parts are sure to be in part washed through the soil by rains and carried beyond the reach of the roots of the plants, whereas if applied in less quantities, the plant roots take what they can, a portion is retained by the soil, and a very small proportion is lost. On clayey soils, or on those which are rich in organic matter, heavy applications of 100 bushels per acre may be and are made.

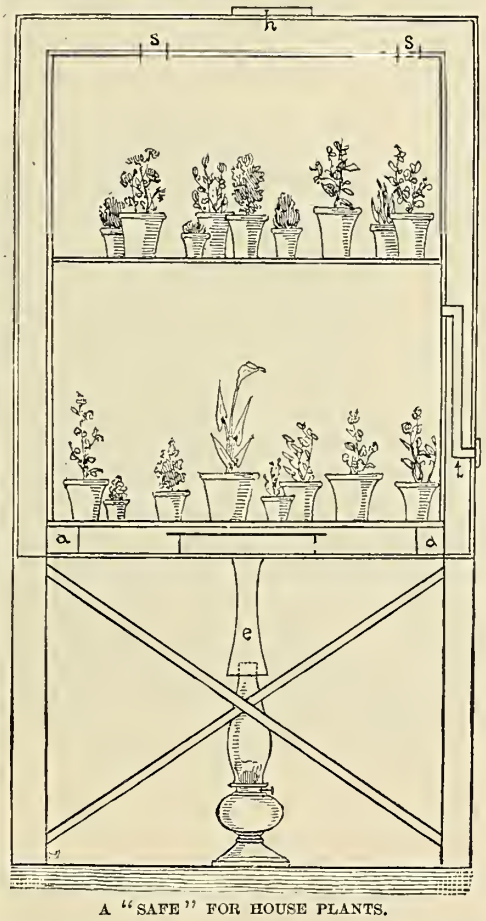
The crops most benefited by unleached ashes, besides grass and all fruit crops, are potatoes, root crops, and Indian corn, and to these crops it may be applied in the hill or drill at planting, or dropped by hand near and upon the plants soon after they come up. There is some danger of injury to the seed unless the distribution is very even, hence the surface application is usually preferred. Ashes work down in the soil. Rains wash down their most valuable constituents, and on their way they act favorably upon the soil, and come in contact with the roots of the plants. They should, therefore, always be applied upon or near the surface of the soil.

With leached ashes the case is different. The most soluble parts have already been washed out. They still contain, however, a notable and very variable quantity of potash, which soon makes its presence known, and as leached ashes are usually applied much more liberally than unleached, the response of crops is prompt and satisfactory. They may be economically used for the same crops. Upon grass they are spread as a top-dressing as evenly as possible at the rate of 50 to 100 bushels to the acre—less upon light soils than upon heavy. Unleached ashes are applied to grass and clover in about half the above quantities, namely, 25 or 30 bushels per acre upon sandy or light, loamy lands, and 50 bushels or more upon heavier soils.

When ashes are used upon any crop which occupies the land only one year, that crop, though greatly benefited, takes but a small part of the application. It should be followed by grass, clover, or by a succession of crops which will make use of this legacy of fertility.

A "Safe" to Keep Plants from Freezing.

"G," Morrisonville, Ill., in view of the frequent difficulty of preserving window plants during the severe winter nights, has contrived a "safe" in which they may be placed for protection. Our correspondent finds that in the "thin skinned" houses so many live in, it is too expensive to keep up coal fires all night for the sake of the plants, while by a proper arrangement for the use of a lamp as the source of heat, the cost is insignificant. He sends us the sketch given in the engraving, and describes it essentially as follows:



A "SAFE" FOR HOUSE PLANTS.

"This 'Plant Safe' is simply a box within a box, and may be of any desired size. It can be made ornamental, or of simply two common store boxes made tight with paper. The inside box rests on four blocks, the two in front being shown at *a*, *a*. There is an air space between the top and sides of the inner and outer boxes of three inches, and of about five at the bottom. A tin tube, *e*, is fitted in a hole in the middle of the bottom. Above this tube, about an inch and a half below the bottom of the inner box, is a piece of iron or tin-plate resting on four legs. This is to prevent the heat of the lamp from burning the wood. An opening, *h*, on the top of the safe, has a sliding cover, and acts as a chimney to create a draught. The front of the safe has two tight-fitting doors, not shown in the cut. They may be hinged or simply fitted in lid-fashion. To admit air to the plants, a tin tube, *t*, is used. It has a sliding cover over the outer end. This tube is kept warm by the heat in the air chamber, and slightly warms the air passing through it. Small holes at *s*, *s*, allow the air to pass out. The loose and open middle shelf permits free circulation inside. A little experience is necessary in managing this safe. Be careful not to turn on too much heat at first. On ordinarily cold nights a very small flame will prevent the plants from freezing. Extra cold spells may require the full flame, and but little air through tube *t*. Regulate the slide at *h* to correspond with the heat turned on. If the safe is very large, two lamps may be employed. A lamp supplies much heat, and you can *cook* the plants. The draught must be good to make the lamp burn well. It will not heat the safe with the opening, *h*, closed. If the plants have a wilted appearance it shows they need air, therefore admit more through the tube *t*. The safe may stand in a corner, out of the way. With careful management it will preserve plants perfectly through the coldest weather."

[We give the above as one method in which oil may be used as fuel to keep plants from freezing. Whoever makes a "safe" of this kind should take every precaution against accidents by fire. The tube, *e*, should not be in contact with the wood. When long exposed to an elevated temperature, wood becomes exceedingly inflammable. The safe when filled with plants will be very heavy, and should be supported on firm legs.—ED.]

Striking Cuttings in Water.

With reference to a note we published a few months ago on striking Camellia cuttings in water, M. Jean Sisley, Lyons, France, writes us in substance as follows: It is probable that a great many more shrubs may be propagated in this way than is generally supposed. I have in this manner propagated the Aucubas (Gold-leaf Plants) and Hortensias (garden Hydrangea) most easily and successfully. In autumn, when the wood begins to harden, I take the young top branches of the plant, with four or five leaves, and place about half a dozen cuttings in a glass filled with water. It is very easy to see when roots appear, and the cuttings require very little attention compared with those in pots, which must be regularly watered. While it is not required, the cuttings would root quicker with a slight amount of bottom-heat. With Camellias, I take cuttings of a single variety, cleft-graft it with a double kind, and place the whole in water as if it were a cutting. For this, bottom-heat, and a bell-glass are required. Propagating Camellias thus, saves a year.

Striking cuttings in water is but one remove from what is known as the "Saucer System." In that, short cuttings are thickly placed in a saucer of pure sand; this is exposed to full sunlight, and kept constantly very wet, a kind of sandy mud. Both this method and that with water alone offer an interesting field of experiment to the amateur.

Underdraining Dries Wet Land and Dampens Dry Land.

This may seem an absurd statement to many who have not read or thought upon the matter. Such will be interested in the following explanation. It is a scientific fact that in proportion as common air becomes warmer it absorbs water, and so combines with it as to cause the water to disappear and become insensible. Surround a room containing cold atmosphere with such tight walls or sheathing that there can be no ingress or egress of air. Now heat the air 20 or 30 degrees, or more, by steam or hot water pipes passing through the room, or by radiators, and it will become so dry and eager for more moisture that it will gather it from the surface of the body and from the lungs, giving one a disagreeable, parched sensation. If the room be closed when it is filled with *warm* air, as this cools down it will give out moisture before concealed, and everything in the room will become damp. On very cold days or nights, the inside air, cooled by the window glass, deposits so much moisture that it forms a film of ice, often amounting to a cake along the bottom of the panes. A tumbler or pitcher of ice-water cools the air in contact with its outer surface so much as to cause it to deposit a large amount of moisture upon the surface, giving it the appearance of sweating, though in fact no water passes from the inside to the outside. If a large amount of warm air, moving as wind, meets and mingles with a small current of cold air, the temperature of the whole is reduced, the concealed water is given out, the particles of watery vapors unite, and when enough of them get together to intercept the sunlight we have fogs and mist. The clouds do not come from any distant water depository, but are formed from the water in the previously clear atmosphere above us, but which was previously so combined with the air as to be entirely invisible.

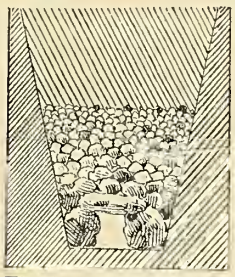


Fig. 1.—A STONE DRAIN.

Apply the above explanation to underdrains. After more rain falls than the ground can readily absorb, the excess settles into the drains and flows away, leaving the soil in a suitable condition for the roots of growing plants. But in a dry time, the air upon the surface is heated by the sun's rays that are absorbed by the top layer of soil. This heated air expands, and rises just as warm air rises from the heated stove. At the same time warm air enters the open ends of drains, passes along them, and constantly ascends through the soil to take the place of the heated air rising from the surface. But all the soil below an inch or two of the surface is cooler than the air that enters the pipes, and this being cooled deposits its previously concealed vapor, so that, in fact, it moistens the ground.

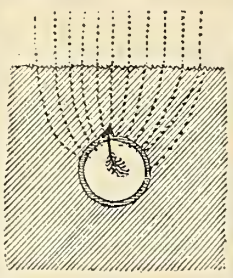


Fig. 2.—A PIPE DRAIN.

We can thus understand why underdraining not only carries off excess of water, but also dampens the soil when it is dry. Stirring a dry soil with hoes or cultivators in hot weather brings hot, moisture-laden air in contact with soil colder than itself, and it deposits moisture upon it.—Another important effect of such drains or air passages is that the air thus passing through the soil oxidizes portions of the plant food in it, both mineral and organic, and thus increasing the fertility. It also often destroys poisonous substances in the soil, like the proto-salts of iron which the access of air changes to the innocuous per-oxide.

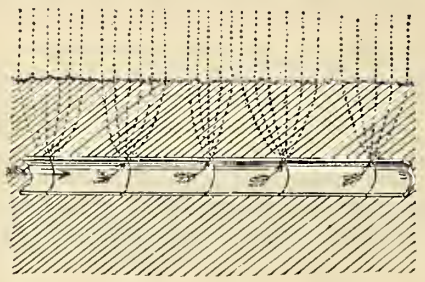


Fig. 3.—WARM AIR RISING FROM DRAIN PIPES.

Propagandism on the Farm.

The mutual aid secured by wisely conducted guilds and associations keeps alive the enthusiasm of the body, and makes more skillful mechanics and more successful professional men. There is a great deficiency of this kind of public spirit among the farming class, the most numerous and the most independent among our fifty millions of people. There is no jealousy of intrusion from outsiders, either from abroad or at home, among them. Farmers from Europe come by the ship-load, some of them with large capital, and there are no fences put up around the farms or prairies, to prevent professional men, mechanics, young men from all classes at home, from becoming farmers. Excepting the work of speculators in our large cities, there is nothing to create an artificial price for the products of the farm. There is a fair field for the industry and skillful labor of every cultivator. There is perhaps no calling in which industry and educated brain power has a fairer reward than in husbandry. Better farmers are the great want of our calling in all parts of our country, and there ought to be public spirit enough in the body to secure a wiser direction and better reward of the manual labor on our farms. Much has been accomplished in the last thirty years, and in some sections we find, at intervals, intelligent husbandry, and ample rewards. But much more remains to be done, so that the industry of the farm in every section may be more uniformly rewarded. There are many forces now at work that may be greatly helped and intensified by the farmers themselves. Farmers' clubs have done much in the very limited districts where they have been kept up to aid good husbandry. With a few intelligent cultivators for leaders, a club can be organized in almost every township in the older States. Farmers' wives and daughters can be made very efficient helpers in the management of these institutions, and the social ends to be gained by them are hardly less important than the improvement of husbandry. The State, county, and local agricultural societies, with their annual exhibitions, are important factors in this good work, in spite of their occasional perversion to horse-racing and gambling. Good citizens should see that these evils are eliminated from the fairs. The agricultural schools and colleges are winning their way to popular favor, and correcting the once common prejudice against book farming. The belief is now quite common in our halls of legislation that educated brains have a fair field upon the farm, and it is possible to get State aid for Agricultural Schools and Experiment Stations. Reliable manures are in the market that bear the test of the laboratory and the soil. Last, but not least among these forces, is the agricultural press. Every man who reads and profits by a good journal should see that his neighbors share his blessing. There is no easier, more effective way of illustrating the propagandism of the farm.

Keeping Squashes and Sweet Potatoes.

While most of the products of the garden, the common roots, celery, cabbages, etc., need to be kept at a low temperature during winter, these tropical plants, the Squash and Sweet Potato, would perish under like conditions. In the harvesting, and in all subsequent handling, Sweet Potatoes and Squashes should be treated as carefully as if they were choice fruit, as a bruise will cause decay. Those who raise either largely for market, have a proper place for their storage, usually a building fitted for the purpose. This building has a stove by which the temperature can be kept constantly at 60°. Squashes are placed upon shelves, so arranged, that they may be readily inspected, and any that show signs of decay removed before they infect others. Sweet Potatoes are stored in bins holding a few barrels each, and so placed that air can freely circulate among them. Provision in both houses is made for ventilation when needed. Those who have only small crops can not have special buildings, but may preserve them by imitating the same conditions. The best success we ever had with small lots of Sweet Potatoes was to put them in such boxes as were at hand; these were placed under the kitchen table, or in other available parts of the room and, as an experiment, a part of them were kept until spring. We have also had excellent results with Squashes by placing those to be kept the longest upon the top shelves of a warm kitchen closet. A cellar, unless very warm and dry, is a poor place for Squashes. Place them elsewhere when you can do so.

Evergreens for Hedges.—Several have inquired about these. The usual method is, in localities where they are abundant, to collect the natural seedlings from the woods. Indeed, some nurserymen send to a distance for the seedlings, finding it cheaper to do this than to raise them from the seed. The kinds principally used for hedges are Arbor Vitæ and Hemlock. Young plants of these, about a foot high, are gathered in spring. They are set closely in nursery rows, and shaded by a temporary screen or shelter covered with brush. Some will die, but those which survive the first summer may be set in the hedge row with prospect of success.

THE DOG AND HIS RABBIT.—*Engraved for the American Agriculturist.*

Few have time to acquire such skill with the gun as to readily bring down the whirring partridge, or the deftly darting woodcock. Every farmer's boy, however, can bag his rabbit after a moderate amount of practice. And it is indeed most exhilarating sport as the fleet-footed little creature, suddenly startled from a brush-heap covert, clears the ground at ten-feet leaps, and closely followed by the dog, gradually enlarges his circle until the fatal shot has stopped his course. Though so innocent in appearance, so graceful in movement, the rabbit destroys your trees and vegetation, and is legitimate game for the gunner's bag. Let the lad who has toiled hard during seed time and harvest have his day of sport. Buy him a valuable dog like the one, for example, in the engraving, which will retrieve the game and be his companion through field and thicket, adding to the excitement and enjoyment of the hunt. Your boy won't leave you for town or city if you will study his enjoyment somewhat in this and other ways. Give him dog and gun and fishing tackle, while your daughter has her bow and target, her croquet and lawn tennis. Is it surprising that the farm boy or farm girl tires of monotonous life, and craves another, when the city cousin comes laden with these means of enjoyment? How well we recall our boyish longings for a dog! "It would not answer," father said, "to have one on the place; he would do more harm than good." But when, after much entreaty, Rover came, how our young heart bounded, and how cheerfully and cheerily with our new friend and companion we went down the long lane into the clearing, and brought the cows home that night. It costs as much to feed a blooded dog as a cur; so purchase a good animal while you are about it for the boy—useful and ornamental.

A Maryland Corn House.

"Young Farmer," Glendale, Md., writes us: "Enclosed find a drawing of a corn crib that I think is the best I ever saw. It is 15 by 20 feet, with 8-foot posts, set 2 feet above the ground, on dressed stones or posts, with tin around them to prevent the rats and mice from getting in. The sills are 8 by 8; plates,

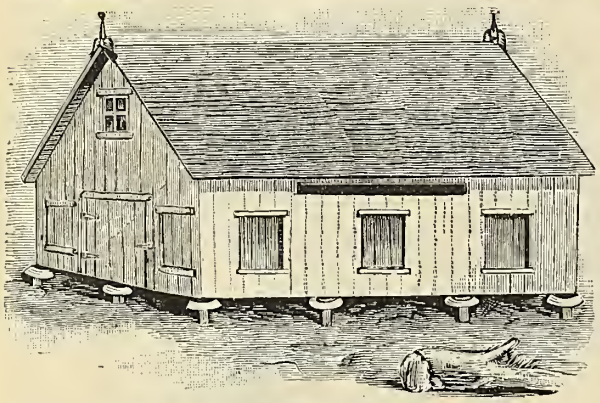


Fig. 1.—EXTERIOR OF CORN HOUSE.

6 by 6, well framed and braced. The main door is at one end. The shelling floor, 6 by 20 feet, is in the middle, with the corn bins, 4½ by 20 feet, on the sides. The bins have slatted bottoms and partitions. Boxes for removing the corn at the bottom of the bins, are made by setting a board up edgewise, one foot from the partition, and securing it firmly by end pieces. There are no slats on the partition back of this board for 15 inches

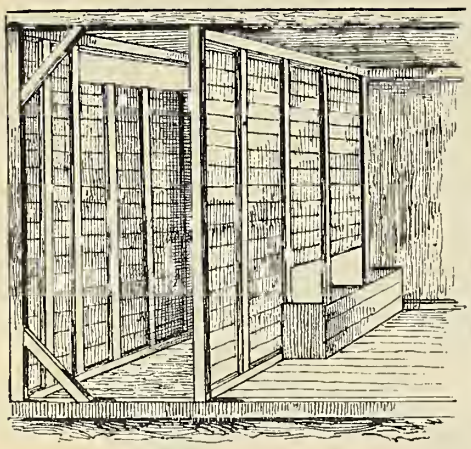


Fig. 2.—INTERIOR VIEW OF CORN HOUSE.

from the floor, and the corn flows down as fast as taken out."—The exterior of the corn house is seen in figure 1, and the interior view is given in figure 2, in which the form and position of the corn box is shown. A door 1⅓ by 10 feet is on each side above the bins, through which the corn is shovelled into the corn house. These doors open outward, and are fastened inside with hooks and staples. The entrance to each crib, or corn bin, is at the end, and is closed with loose slats as the bin is filled. There is no loft or stairs in this corn house, the upper part being open for the free circulation of air.

Cotton and Electricity.—The Secretary of the Cotton Exchange, Vicksburg, Miss., writes us that Dr. L. E. Nagle, of that city, suggests the use of electric light to aid in suppressing the Cotton-worm. The parent moth is readily attracted by lights, and he thinks that the powerful electric light may be made the agent to destroy vast numbers of them. Our correspondent says that the idea has been favorably received, and that it will probably be put to a practical test.

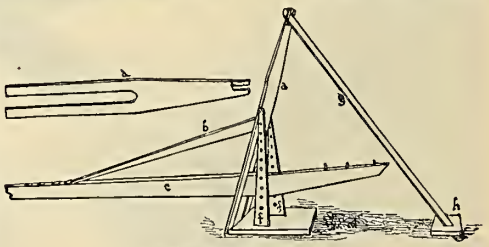
Preserving Roots for Daily Use.

Since heating houses by furnaces in the cellar has become common, the cellar is usually too warm and dry for the proper keeping of roots. It is not desirable under any circumstances to use the cellar of the dwelling for storing large quantities of roots. If such a mass of vegetable matter has any effect upon the atmosphere of the house, it must be unfavorable, and this is certain if decay takes place, while the odor is often unpleasant. Roots in small quantities, to be at hand when wanted in the kitchen, may be packed in barrels or boxes in sand, and covered with it, or with sun dried earth. This will avoid unpleasant odors, and prevent the roots from shrivelling, but if the cellar is warm, growth is likely to commence, to the injury of the quality of the roots. Still, by bringing in from the general root-cellar or covered heaps, only moderate quantities at a time, this trouble may be avoided. Farmers may sometimes find the market gardener's method useful. A trench is dug in a place naturally well drained, or when it can be made dry by draining. This trench is dug three or four feet deep, about six feet wide, and as long as needed. The roots are then packed up across the pit, in a section about two feet long; then another section is built about six inches from the first, and the space between the two is filled with soil. The sections of roots are continued up to the top of the trench, and when it is finished, there will be a series of small filled pits, two feet long, separated by narrow walls of earth six inches thick. The roots are finally covered with about two feet of soil, finished so as to best shed water. The great advantage of such trenches over the usual large pits is in allowing a few barrels of roots to be taken out at a time, without disturbing the rest. We have known small quantities of them to be preserved in little root-cellars, made by sinking barrels or casks in the ground, in a place convenient to the kitchen. These should be provided with covers, and some boards laid over the top of the barrels will facilitate clearing off the snow.

Raising Potatoes from Sprouts.—"G. R. B.," Woonsocket, R. I., sends us a quotation from an English paper which describes the growing of potatoes from sprouts as an experiment "just completed in England." Mr. B. says this method of growing potatoes has been practised for years on his father's farm, where more acres of all the leading varieties are planted each spring from the sprouts ordinarily thrown away, than with the tuber. The yield from sprouts is quite up to that from whole or cut seed, and the product clean and smooth. The sprouts, which are produced by potatoes in a warm cellar in spring, from an inch to a foot in length, are dropped and covered the same as a potato. He takes care to have the tops of sprouts just above the surface, though he thinks that if completely buried, they will come up. We are surprised that the *Agricultural Gazette* (Eng.) should find this a novel method, as it has long been in use in parts of England. Where it is desirable to make the most of a scarce variety of potatoes, the sprouts are encouraged, and cut up to make a plant of each joint, as if it were a Dahlia.

A Log Lifter.

We have this description and illustration of a "log lift" from Mr. J. M. DeFord, Mercer Co., Ohio. He writes: I have, in sawing railroad ties, etc., found that the saw would be pinched so much that it was difficult to move it. To avoid this I invented a 'lift,' which proves just the thing desired. The piece, *a*, is 4 feet long, 6 inches wide, and 1 inch thick; *b*, 3 feet long; *c*, 6 feet long; *f*, *f*, 20 inches long; *g*, 4½ feet. The posts are put together as shown in the sketch. Place the 'lift' above the log, where it is to be secured. Adjust the lever, *c*, and with the weight of the body bring the log to the desired hight, and hold it there by slipping the end of the ratchet, *b*, in one of the notches on the upper side of the lever. The weight of the log on the lever will cause the 'lift' to tip up. The

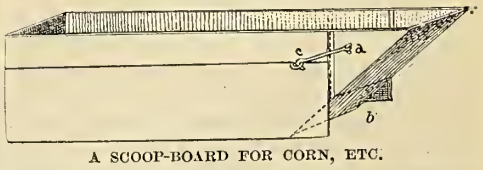


A CONVENIENT LOG LIFTER.

arm, *g*, prevents this if carefully adjusted before the log is raised. The foot, *h*, on the arm should be fastened on loosely so that it will accommodate itself to the ground. The arm should be allowed to extend 3 or 4 inches below the foot, and made sharp so that it may sink in the ground and prevent slipping.

A Scoop-Board for a Wagon Box.

Mr. G. W. Barclay, Cedar Co., Iowa, writes us: "I find the *American Agriculturist* an invaluable guide and adviser in all things pertaining to the farm. Each number contains something worth as much as the whole year's subscription."—Mr. B. sends a sketch of a scoop-board to be attached to the rear end of the wagon-box, to aid in unloading corn in the ear, potatoes, coal, etc. The dotted line *a*, shows the position of the end-board; *b*, bottom of the scoop-board; *c*, hook and two eye-bolts. The hook is made of ⅜-inch round iron, 2½ feet long, and supports the scoop-board, as shown in the engraving. The

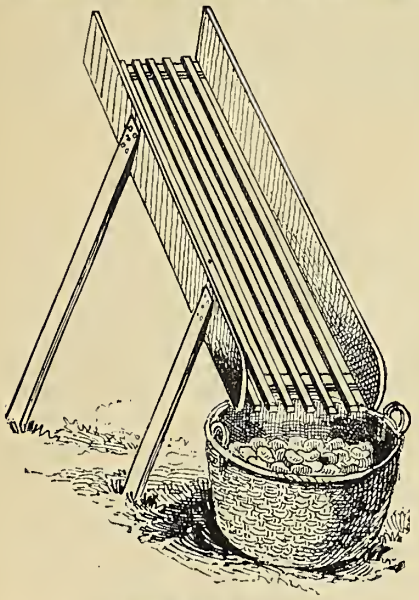


A SCOOP-BOARD FOR CORN, ETC.

side of the scoop-board, *a*, is of the same length as the bottom, which extends into the wagon-bed. Oak or other hard-wood slats are securely bolted or riveted to each side of the scoop-board, to fit into the grooves of the end-boards. In this arrangement there is no loss in the capacity of the wagon-box, and a right or left-handed person can use it equally well.

A Cheap Potato Screen.

Sorting potatoes by hand is tedious, and the adhesive earth remains. With a very simple, cheap apparatus, shown in the engraving, the small potatoes are quickly separated from the larger ones, suitable for the market. It consists of a slatted trough, 5 or 6 feet long, provided with legs or standards of proper length, to keep it so inclined that when potatoes are shovelled upon the screen, they will roll down. The slats may be of inch stuff, attached to the two bottom cleats—their centers 1½ inch apart, a little closer at the top, and a trifle further separated at the bottom, so that the potatoes may not become wedged in the spaces. A suitable width for the screen is 20 inches, with side boards 8 inches high. When unloading potatoes from the wagon, place the screen at the side or rear, and shovel them directly upon it. Those of suitable size will run into the basket, while the smaller ones, with the earth, little stones, etc., will fall upon the ground or into any receptacle placed to receive them.



A SCREEN FOR POTATOES.

A Mixture of Grasses.

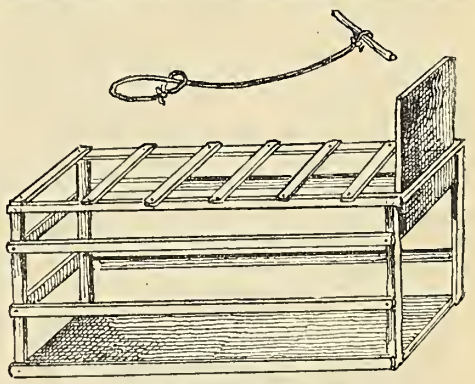
Our grass lands are often less productive than they might be if a larger number of species were grown together. By examining an old pasture or meadow sod, a variety of grasses and other plants will be found, all contesting for the possession of the land. This is the result of natural sowing, and indicates the utility of mixed seeding. It is well known that mixed crops are usually more productive than single ones. Thus an acre of peas and oats grown together will yield much more than a half acre of each sown singly. Ground seeded to timothy and clover will produce nearly twice as much as when either is grown by itself. The periods of greatest vigor in different grasses do not come at the same time, so that in mixed seeding there is a succession of herbage and a continuous demand for the plant food made available from day to day. Thus a pasture sod composed of a mixture of orchard grass, timothy, Kentucky blue-grass, and red clover, will be in good grazing condition from early spring until late autumn. The orchard grass makes a fine April pasture, and the blue-grass is at its full vigor in October, while the clover and timothy, in the order named, fill the gap between the early and late grasses. The American farmer has much to learn from the English, in the making of permanent and profitable pastures. Some of the English catalogues of agricultural seeds offer no less than a score of different mixtures for seeding to grass on various soils, with the name and quantity of each sort to be used. Some lists contain 25 different kinds of grasses, clovers, and other forage plants. With us, the list is not often longer than timothy, red top, and clover, and more frequently only a single sort is sown. A field thus seeded is kept in pasture or meadow for only a short term of years before it gets foul with weeds, or ceases to be profitable, when it is plowed up and sown to grain. We are in great need of good strong pastures that, with top-dressing from year to year, may be both permanent and profitable, and that may be depended upon to produce a good supply of herbage throughout the growing season. In such pastures there should be tall grasses, with those that will do well when over-shadowed; those that are early to start, and those that grow until the close of the season; those for a wet season mixed with sorts that do well in a time of drouth. Here is a good field for the experimenters to find what mixtures of grass are best for various soils at our various stations, localities, and climates.

Deserted Homesteads.

In the north-east quarter of a Connecticut town, not far from our residence, there are many deserted homesteads, dwelling houses with doors and windows gone, chimney stacks still standing, or partially fallen, gaunt cellar walls, where the Nettle and Blackberry flourish. There are yards, where the lilacs and lilies still bloom, and old apple and pear trees remind us of the culture and thrift that have vanished. These old homesteads are generally upon the hills, and in the stony portions of the town, where cultivation always must have been difficult, and industry meagrely rewarded. They are usually pictures of desolation, where the rank growth of wood has not had time to obscure the old landmarks. This district is a type of very many of the agricultural towns of New England. The census shows a loss of population, but not probably a loss of productiveness or of wealth. The outlook for these towns is by no means so discouraging as would appear to the careless observer. They prove that a great change has come over our husbandry, and indicate possibly a still greater change in the future. The people who cultivated these homesteads, reared large families, and gained a comfortable subsistence upon them, all belonged to the age of home-spun, which closed nearly fifty years ago. The old spinning wheels and looms that lumber the garrets, and occasionally find their way into antiquarian exhibitions, are vivid remembrances of this vanished age. Almost every thing the family consumed was raised and manufactured on the farm. The wearing apparel of men and women, the bed linen and the stockings, were spun, woven and knit by the mothers and daughters. The village hatter made the hats, and was paid in the products of the farm. A circulating cobbler made an annual visit, and furnished the shoes. Other mechanics were mainly paid in barter. Whatever else was needed of foreign products at the country store—tea, coffee, sugar, pipes and tobacco—was paid for mainly in dairy products and eggs, and the wife was expected to keep this department clear of debt. There were few luxuries upon the tables, and few of the comforts that are now to be found in almost every thrifty farmer's home. There was a lamentable dearth of books and papers, no pianos, parlor organs, or melodeons, and the furniture, still extant in some of these old homes, was of the plainest sort. There was very little money in circulation and the want of it was not seriously felt by people whose tastes were adjusted to their circumstances. Farmers with modern tastes and education could not support their families on these rough acres, and for that reason have sold out, gone West, to the cities, or into other employments. The land has passed into the hands of neighboring farmers, who occupy farms more easily tilled. Some of it is used for pasture, but the larger part has gone, and is going more and more to wood, which is on the increase in nearly all these districts. The remaining farmers on the better land, have all the advantages of improved machinery to cultivate their crops, and gather their harvests, and the value of these crops, in almost every town, is greater than it was fifty or a hundred years ago. By the increase of the population and wealth in the neighboring cities and villages, the local markets have been vastly improved, and the farmer has a ready sale for every thing he can raise. Animal products sell at three and four times the prices they brought fifty years ago. The old homestead may have gone to forest and pasture, but the State has doubled its population, and tenfolded its wealth.

A Pig Box and Holder.

Mr. W. A. Gregg, Grant Co., Ind., sends us a sketch and description of a device for holding pigs while ringing them. The box should be 3½ or 4 feet long, 2½ feet high, and 20 inches broad inside, large enough to hold the largest hog, and yet not so wide that small hogs can turn around in it. The posts are 2 inches square; the end, side, and top, slats 2½ inches wide, 1 inch thick. The bottom is made tight with inch plank. The hog may easily be driven or led into the box by putting it close up to the door of the pen. When in, let down a perpendicular board behind the pig, between the slats, and the most vicious hog is as helpless as a child. Take four feet of common clothes line, tie a two-inch loop at one end, pass the other end through this loop until a second loop 12 or 15 inches long is formed. Tie a short stick to the opposite end of the rope to assist in holding. Let the



A PIG HOLDER AND NOOSE.

loop down between the top slats, just over the hog's head, and with a stick put one side of the loop into his mouth, getting it above the tusks. Draw the snout up and out between the top slats, and hold it firmly against the slat, insert the ring, loosen the rope, raise the board, when the animal will back out, and the box will be ready for another.

Is the Pig a Nuisance?

Is the pig a nuisance in the village? He is, and he is not, just as he is managed. On the farm, he has his place yet, as an indispensible worker, and cheap source of food and fertilizers. But in the village, where esthetics sometimes interfere with profits, people are getting fastidious, and avoid the pig pen as a nuisance. It would be a nuisance perhaps, under the eaves of the dwelling, managed in almost any way. But at the back end of the village lot, where the barn, if there is one, is located, there the sty may be safely placed without offence to eye, ear, or nostril, and with decided profit. It is the cheapest source of good pork, ham, shoulder, sausage, head-cheese, and lard, that a villager can have. As a manufacturer of fertilizers for the village garden, the pig can not be beaten. He turns every weed, sod, vegetable, fruit, and all kitchen waste into gold. "Ah! but he squeals!" Then feed him more, and he will be quiet as a lamb, all day and all night. "Ah! but the pen is unsightly!" That is your fault, not his. Even the sty has its esthetics, and it may be made "a thing of beauty and a joy forever" if you like. "Well, he smells badly, any way." No, sir. Not if you take proper care of him. Give him a sheltered bower for his nest, and plenty of straw or leaves, and he will keep his bed as clean as a parlor. Give him plenty of muck or peat, garden soil, head lands, or absorbents of any kind, and he will so thoroughly observe the Mosaic law in regard to animal wastes, that no neighbor of yours shall mistrust that a pig is within a mile of your premises. The health committee of the village will never smell you out, or enter complaint against your sty. Do not lay your sins of omission at the door of the dumb beast. He has his esthetic side, and only requires a fair share of attention to be made ornamental, as well as useful. Please take particular notice that we raise our own pork, eat home-cured hams, and know the woman who makes our sausage meat.

Levels and Leveling.

It is often desirable to determine levels, as, for instance, to know which way a field slopes, or the level of a spring which may be conducted to a neighboring pasture if its elevation is sufficient, etc. For such purposes we may sight across a carpenter's spirit-level, if one is at hand, or set an iron square by a plumb line held against its downward arm, or even use a surveyor's compass, or a clinometer, always provided you have one. But, with only a string and a jack-knife, what are you going to do? Set up a tripod made of three forked sticks, as shown in fig. 1, and tie them if necessary. Cut a long slender wand, and after beating it to flexibility, bend it into a hoop (fig. 2.) To one side tie a string with a loop, in all a foot or more in length, and to the opposite side, attach a stone as large as two fists. Suspend the hoop by the loop slipped over one of the forks, so that it will hang in the middle under the tripod, fig. 3. When the hoop hangs perfectly plumb and still, the twist being out of the strings, set two pins at opposite sides of the hoop, as at *a* and *b*, as nearly level as possible. (They may be dress pins or thorns.) Now, arresting any tendency to twirl by holding a twig or pencil against the hoop when it is at rest, sight across the pins, say from *a* to *b*, at some object in the distance, then turn the hoop around and sight from *b* to *a*. If the same object falls in the line of vision, the points *a*, and *b*, are level, if not, either one or the other may be shifted; or one of the strings may be slipped a little, one way or the other. Test the level again, and when the same object comes in line, looking from *a* to *b*, and *b* to *a*, after turning the hoop, the line is accurately horizontal: The instrument has to be tested every time it is set up, if only carried a few rods, but any man or boy who can sight across a fowling piece, can get useful results, approximating to correctness with this device.

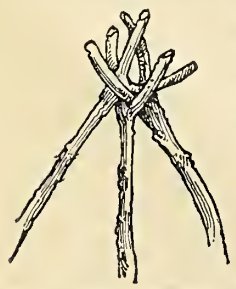


Fig. 1.—TOP OF TRIPOD.

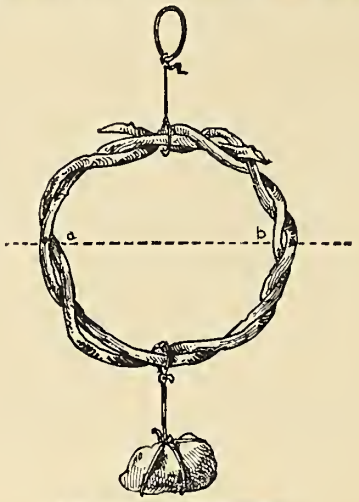


Fig. 2.—THE WAND-HOOP.

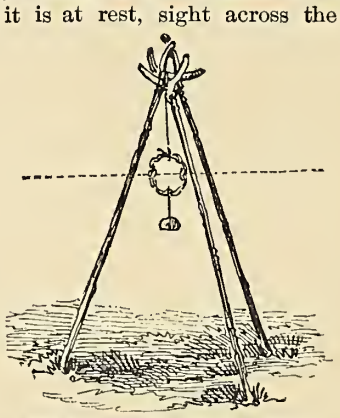


Fig. 3.—THE LEVEL COMPLETE.

Tile Draining.—Do not forget that swales, swamps, and any wet land with hard pan near the surface, pays very small interest, if any, in their present condition. If drained three feet deep with tile, they will pay a very large interest on the original cost, and on the drainage besides. It is not unusual to get back the cost of drainage in two crops, after the tiles are laid. Where tiles can be had near, or at a cost for freight, not exceeding their price at the kiln, it is cheaper to drain with tile than with stone. If tiles are not available, and stones are upon the ground, use these. Draining will open a new world to the farmer who has never tried it. Put down the "crockery" this fall, and make your capital in land draw a good interest.

Protect the Manure.

An English farmer on using, for the first time, manure that had been made under cover, had his crops ruined by luxuriant growth. He used the same amount as he was accustomed to of the open-yard manure, and the grain was lodged before it was ready to harvest. This is a strong argument in favor of a protection for manure. On most soils it is very important to have it well decomposed, so that the plants may obtain an abundant supply of food from it at once; but during the fermentation process, to render its insoluble compounds available, serious losses of fertilizing materials are very often sustained. If the fermentation of the heap is rapid, there is danger of losing the very valuable nitrogen as volatile ammonia, which, passing into the air, is as likely to aid a neighbor's crop as our own. On the other hand, decomposition may go on so slowly that the manure is unfit for immediate use when wanted. It is no easy matter to conduct the decomposition so that the most good manure may be made with the least loss. It is, however, demonstrated that hot sun, winds, and rains, are to be kept from the heap, and that is, the best manure is made under cover. A method of box-feeding has been adopted by many, which allows the manure to accumulate under the animals for months. It is found that this system does not imply offensive stalls, and that there is little loss of nitrogen—the element of greatest value, and most likely to escape. It is only necessary to use enough litter to absorb all the liquids. Covered yards would secure much the same conditions for the manure by protecting it from the drenching rains, and the exclusion of air by compact treading, which prevents a too hasty fermentation. It is certainly worth while for every farmer who contemplates the use of commercial fertilizers, to see that he is making the most of the manure which his animals are giving him daily. Preserve and protect it diligently.

Confining a Cow's Switch at Milking.—Most milkers are acquainted with the annoyance of the cow's switch while milking, which is intolerable in dog days, and a serious inconvenience even when there are no flies to be scared away. Not only are the sides of the animal perpetually lashed, but the face and eyes of the milker, and the milking is seriously interrupted. Had the animal been trained to the work, she could not plump her switch more accurately into the middle of the milk pail, which contaminates the butter, and sours the temper of the dairy maid. Various devices are resorted to, to abate this nuisance, with partial success. Tying the switch around the leg answers well, but there is loss of time in the tying, and untying, though we use a portion of the switch for the fastening. A long loop of rope thrown over the hip-joints, and falling

down to the level of the udder behind, will restrain the switching, but it takes time and labor to care for the rope. If the milker, after he is seated upon the stool, will place the switch of the cow upon his left knee, and use his left elbow as a weight, he will have complete control of the missile that annoys him, without interfering with his freedom in milking. This device is not patented!

Breeding for Eggs.

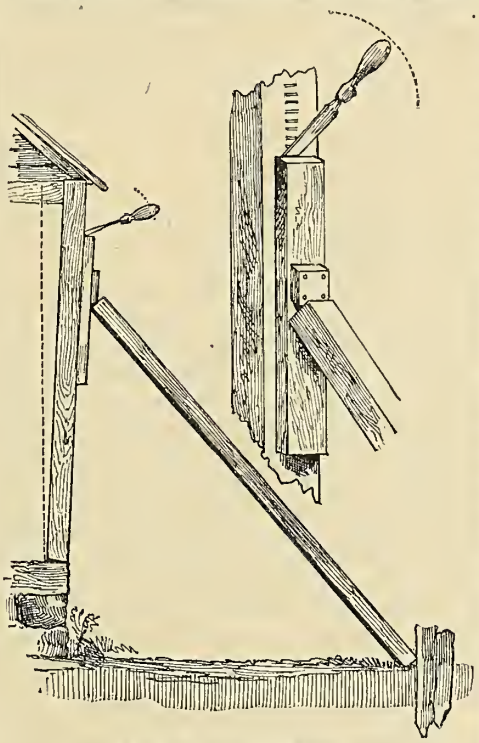
BY D. Z. EVANS, JR.

Aside from breeding poultry "to feather," to be sold as high class thorough-bred fowls at high prices, there is more profit in breeding poultry for eggs than for flesh. This is especially true for those near large cities, where buyers are willing to pay roundly for really fresh eggs. The prices for such eggs are from ten to thirty per cent higher than the regular market rates; and where the producer can meet the consumer, deliver the eggs, and collect the cash himself, without any expense for transportation, commission, etc., the profits are correspondingly large, and the risks of loss reduced to the minimum. There are multitudes who have large plots of ground not far from town, who could materially increase their incomes by keeping fair-sized flocks of good laying hens, and without requiring much time from their regular business. It is not good policy, however, either to keep too many birds on a single place, or to attempt to make a living entirely from poultry, without having considerable experience in breeding profitably for market, and even then it is not wise to give up a comfortable salary to go into breeding poultry extensively. The best way is to "make haste slowly." The flocks can be increased with experience, until it is proved beyond a doubt that enough can be made from the poultry to warrant an entire dependence upon them for a living. This is the true way, not only with poultry, but in any calling, where work must take the place of cash, in part at least.

The profits in poultry depend mainly upon the buildings in which the fowls spend much of their time. The high prices eggs command during the winter months, and in fact all through the cold weather of late fall and early spring, make it an object to get as many eggs as possible during those times by care and good feeding. Good hens will lay just as well at such times, if the necessary food and warmth is insured. Elaborate and expensive houses for poultry are not necessary. All desirable and practical purposes are served by making them of common, rough inch pine boards. These can be jointed on the edges, so as to fit up tightly, with strips nailed on the joints, outside. Upon the entire inside surface put the common roofing felt, which will make a wind and rain-proof finish, and will go far towards insuring freedom from lice, mites, and other insect enemies; the tar in the felting is decidedly unpleasant to the parasites. If there is some near-by building, such as a barn, granary, or shed, the poultry house can be built against it as a back, and thus serve a material saving in lumber and work. The roof can be treated, outside and in, with the same felt covering, which will make it rain-proof. The floor can be made of earth, raised a few inches above the outside soil, so as to insure freedom from dampness and save the expense of floor lumber. A ground floor has another decided advantage over boards, in that it is more healthful and does not engender ailments of the feet, which are often caused by running constantly on hard floors. For ordinary houses, 6 to 8 feet high in front, 4 to 6 feet at the back, and 8 to 10 feet wide, and as long as is necessary, will be found the most suitable, and this will generally cut the boards to the best advantage. When short pieces of boards are left over, they can be used for making the nesting boxes, coops, etc., etc., and nothing need be wasted. For very cold localities, or extreme weather, arrange for having a small coal stove in the house. A half a ton of coal will last an entire season, as it is necessary to have but little fire at any time, merely enough to prevent frost. A wood fire is dangerous, irregular, and requires too much attention.

The Chisel "Jack."

"Jack" is a convenient name for sundry lifting contrivances, combinations of levers, or a screw and lever, etc. Carpenters occasionally exert a gradual lifting power of great



LIFTING WITH A CHISEL.

force, and perfectly controlled, by using a common chisel, which for convenience we denominate a "chisel-jack." It is used in some such way as this. Suppose some building has a "cant" out of the perpendicular. A stout beam is selected, reaching at a proper slant from a point high up upon a post of the building to the ground, where a stake is driven down solidly. If the soil is yielding, two or three stakes will probably make a solid bearing. A piece of sound plank is put under its upper end, where the beam presses against the building, and upon this plank a cleat is nailed, for the end of the beam to bear against. This is all, unless, to avoid defacing the building, another plank or board, longer than the other, is placed between the building and the pressing plank. The edge of a strong chisel is now placed, and shoved strongly as far as possible under the end of the plank as shown, and the handle is then moved through the arc, as indicated by the dotted line. This will shove the plank downward, and exert a strong lateral thrust against the building, which it will gradually straighten. By a little contrivance this power may be exerted in many different ways and directions, with most satisfactory results. In this case, the only defacing of the building is by the marks of the chisel, as indicated by the drawing, and this might have been avoided by using a second plank.

Giving Medicines to Animals.

BY PROF. D. D. SLADE, HARVARD UNIVERSITY.

In administering medicines to his animals, the knowledge of how to do it is most essential to every farmer, and he may not be able to always acquire it from his books at hand. The most ready manner of giving medicinal substances is by mixing them with the food or drink. This, however, is not always practicable, as the animal may refuse the mixture, or may be too weak to make the effort to take it. It must then be given by ball, or by drench from a horn or bottle. One most essential anatomical point to be remembered by every one in the giving of medicine, especially in the liquid form, is, that the tongue should be free. It is mainly by the muscular movements of this organ that the entrance to the windpipe is closed during the passage of food or liquid into the gullet. The introduction of the smallest quantity into the air passages, at once causes intense irritation, made evident by coughing. By preventing natural movements of the tongue, we run much risk of producing suffocation. To illustrate: An ox, after eating heartily, and drinking late in the morning, was puffed up, the swelling disappearing after work. On again drinking at night, the swelling returned. Some medicine was prepared, but the swelling had abated, and the animal was eating hay. But to prevent a recurrence of the disorder, the medicine was given by holding his tongue out of his mouth while pouring it down his throat. He fell down and died immediately. On examination, eight inches of the windpipe was completely filled with chewed hay, conveyed there by the liquid, and strangulation was produced.

When practicable, the ball is the most convenient form of administering medicine to a Horse when he will not take it in food. The ball should be prepared with oil, rather than with syrup, and both in size and shape should resemble a small hen's egg. One person can give it by standing at the right shoulder of the animal when backed into a stall. With the left hand draw the tongue out gently upon the right side, not pulling it, but simply pressing it upon the lower jaw. The ball, held between the tips of the fingers of the right hand, is conveyed into the posterior portion of the mouth, and the hand quickly withdrawn, and the tongue liberated. If the ball is not seen to pass down the gullet on the left side of the throat, a gentle blow on the chin will cause the animal to swallow, or water may be offered. Where the animal is at all refractory or vicious, it may be necessary to hold the jaws open by the halter-rope, or in some cases by the balling-iron, an instrument made for this use.

In giving a drench to a Horse, a horn should be used in preference to the bottle, for fear of breakage. Standing at the right shoulder, raise the head with the left hand under the jaw, and with the right hand pass the lip of

the horn into the side of the mouth, and empty its contents, the head being kept up until they are swallowed. If the animal is violent, place a twitch upon the nose, to be held by an assistant; or if he refuses to open the mouth, the tongue may be gently held to one side, the horn introduced, quickly emptied, and the tongue liberated at once. Under all circumstances, the greatest gentleness must be exercised. Nothing can be gained by impatience or by harsh treatment.

For the Ox or Cow, liquid medicine is preferable, given from the bottle rather than the horn. The bottle is more manageable, and one is less tempted to use it to pry open the jaws, and perhaps thus lacerate the tongue also. Elevate the head only enough to prevent the liquid running from the mouth. The bottle should not be pushed back far into the throat. The tongue should be left free. The following is a very neat and efficacious method: If standing, place the left side of the animal against a wall, and standing on the right side seize hold of the upper jaw by passing the left arm over the head, and bending the latter far round to the right, slightly elevating it. With the right hand, pour the contents of the bottle into the mouth at its angle, using the least possible force.

Medicinal substances can be readily given to the Cat, after properly securing the animal. An efficient method is as follows: Grasp the hind legs above the hocks, between the little and ring fingers of each hand, the fore extremities above the elbow, between the other two fingers, and place the thumbs against the posterior-lateral parts of the head at the base of the ears. Being thus firmly held, the medicine, either solid or liquid, may be given from a common spoon.

A Tree and Potato Planter.

FREDERICK GRUNDY, CHRISTIAN CO., ILL.

Many men are deterred from planting large groves because of the immense labor and time required to set out the trees. They plant only a few each spring as they can spare the time, and thus lose valuable years of growth. The ground can be prepared with plow and harrow, but the planting has to be done by hand labor alone. To obviate this difficulty and encourage planting large forests, I present herewith a tree planter, which will enable a man to set one to ten thousand or more young trees each year, almost as easily as planting so many hills of corn. The machine can also be used to plant potatoes far better than is frequently done with plow and hoe. With this machine 20 acres of one and two-year-old trees can be planted as quickly as one acre with the spade; and 10 acres of potatoes in less time than one acre with plow and hoe, and make a better job. The planter (fig. 1) is similar to a sled, and may be 3 to 4 feet wide. The runners are of 2-inch plank, 12 inches wide, shaped as in fig. 2. They may be shod with a strip of oak or other hard-wood. A strip of oak is bolted near the upper edge of the rear end of the runners. To this strip the entire working parts of the machine are bolted. A V-shaped piece (*e*, fig. 1), built of hard boards, as in fig. 5, marks the furrow. It is made with a solid block in the center, and bolted to the cross piece *d*, fig. 1, to hold the marker firm. Two wings, or scrapers, (*x*, *x*, fig. 1), made of hard-wood and shaped as in fig. 4, are bolted to the cross piece *d*. These wings scrape the earth, thrown out by the marker, back over the roots of the trees. When planting potatoes the smoother is attached, as seen at *n*, fig. 1. This smoother is constructed of boards or plank, and loaded enough to crush all clods, and smooth the top of the row. When planting trees, the smoother is dispensed with. When the machine is moved from one field to another, the bolts are taken out of the strips fig. 2 and 3, and the working parts of the machine laid on the platform *S*.

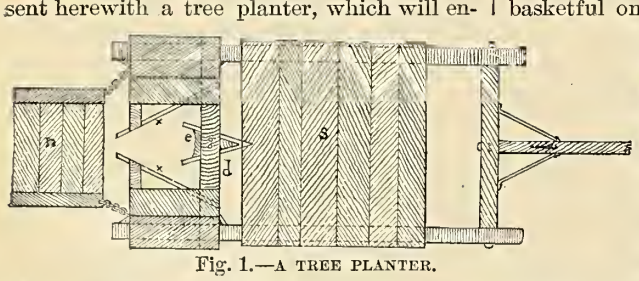


Fig. 1.—A TREE PLANTER.

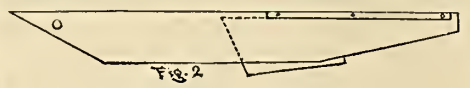


Fig. 2

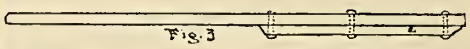


Fig. 3

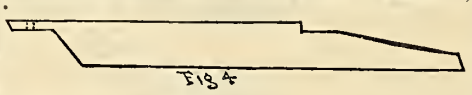


Fig. 4

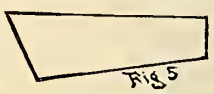


Fig. 5

Plow the ground deep, and harrow it down fine and smooth before setting the trees. Set stakes to guide in driving as in planting corn. Lay a lot of trees on the platform *S*, and with two smart boys on their knees the work may begin. As the machine moves forward, one boy sets a tree in the furrow close behind the V-shaped marker, and holds it straight until it has passed the ends of the wings, *x*, *x*. The second boy gets another tree ready, and at the proper distance duplicates the actions of the first. The driver moves his seat—or if he stands, moves himself—backward or forward to regulate the depth of the marker and scrapers. Have the roots of the trees properly trimmed and in good order for planting.

In planting potatoes, a man or boy sets a basketful on the platform, and drops them behind the marker, using both hands and planting as far apart as desired. When planting trees, four horses should be used to draw the planter, but with potatoes, one boy to drive and another to drop are sufficient.

The marker and the scrapers should be set to run about four inches deeper than the sled runners. (See fig. 2.) For long continued use these parts should be shod with iron.

Kind Treatment of Animals.—No animal appreciates kind treatment more than a heifer. Naturally gentle, it is only by neglect that she acquires habits harmful to herself and annoying to her owner. The writer has seen a calf six months old made the object of torment for sport by a group of "smart" boys. The heifer had a bundle of corn-stalks bound under her body by a stout cord and was then set at liberty in the barnyard. She ran and kicked, and finally broke through a weak place in the fence and hurried away to the back of the field. The creature was never afterwards the gentle animal she would otherwise have been. The fright made her afraid of all mankind, and especially of the boys by whom she had suffered. In some such way as this, most of the "wildness" in farm animals has its origin.

At this season, when the young stock are for the first time brought into closer relations with the owners or keepers, it is of great importance to employ kindness and gentleness.

Wheat Ruined by Rain.

PROF. N. S. TOWNSHEND, COLUMBUS, OHIO.

Under the above heading recently appeared the following item from Lansing, Mich.: "Nine-tenths of the wheat in this and the surrounding counties has been ruined by a seven-days' rain, the grain being sprouted in the shock, and the straw rotted. The farmers are greatly disheartened, as the yield was bountiful and very little had been secured." From other localities have come similar accounts, differing only in degree. Such reports are not peculiar to the present season. In view of the frequency and extent of such losses, one may ask, "Is it good farming, to leave wheat in shock after it is dry enough to be hauled into the barn, or put into a stack?"

It seems a waste of labor to stack grain for a short period, when by thrashing directly from the field one handling is sufficient. This saving of labor is important, and with some it is a controlling consideration. On the other hand, if grain is promptly secured in a barn or stack, as soon as it is dry, although some additional labor may be required, the practice has many advantages. To some, the occasional sprouting of a few grains of wheat may appear to be of little consequence, when, in fact, if one kernel in a hundred of a lot of wheat is grown, the bread made from it will be perceptibly affected. After harvest, both grain and straw throw off moisture: if this occurs in the stack, the grain does not become musty, which it always does if the sweating process, as it is called, takes place in the granary. Wheat in the granary, or elevator, is subject to injury from the Grain Weevil (*Sitophilus granarius*), which it escapes in the stack. Rats and mice are the pests of the granary, but into a stack built as hereafter described they very rarely obtain admission. Farmers frequently complain of middlemen and speculators who buy up grain while it is cheap, and by holding it for an advance make large profits. Does not the farmer who is in a hurry to thrash and at once put his crop upon the market, play directly into the hands of these speculators? If the farmer wishes to hold his wheat for a satisfactory price, it will keep best in a stack, and need not be thrashed until it is wanted. Observation and experience have convinced many that the most prompt and careful securing of grain is the preferable course; the extra cost of providing barn room or of stacking, if regarded as an insurance charge upon the crop, is money and labor well expended.

There are two modes of stacking in use; the simplest and most common plan is, to begin by throwing down a little dry straw in circular form for a bottom. Upon this the stack is built, commencing around the center, so that the middle will all the time be highest,

with the butt ends of the sheaves all lying outwards, and downwards. These stacks may contain a few loads, and, when completed, have nearly the form of an egg standing upon its larger end. A moderate rain will not enter such a stack, especially if the additional precaution be taken to cover it with coarse hay or straw. For a safer and more permanent stack, a floor is made and supported about three feet from the ground upon stone-capped posts. Where stone is readily obtainable, and of a character that is easily brought into convenient shape, stone posts are preferable, as they do not decay. Upon the top of each post of the stack bottom, whether it be of wood or stone, is laid a projecting stone cap, and on these are placed the timbers for sills, and sleepers, supporting the sticks or boards which make the floor. A floor so supported is above all dampness, and out of the reach of vermin; it may be made round, square, or oblong, the latter form being preferred where much room is required. To make a good stack, two persons are needed, an assistant with a fork, to pass the sheaves, and a stacker, who places them carefully by hand. About two-thirds of a stack are placed below the eaves, and about one-third in the roof; the body of a stack should widen out a little with every course, so that water from the roof may fall to the ground without running down the sides; the roof is usually drawn in at an angle of about 45°. If a stack is to be speedily thrashed, it may be made temporarily secure by a covering of coarse hay or straw; or it may be made more secure, and for any length of time, by a covering of thatch, which is rapidly put on by any one accustomed to that kind of work. For a temporary covering for grain stacks or hay ricks, some farmers provide themselves with a stack cloth; this may be an old main-sail, obtained at small cost, and served with a coat of linseed-oil and tar, or it may be made of new material adapted to the purpose. Such a loose covering is a great convenience, and upon hay or grain stacks it will sometimes save twice its cost in a single year.

Farmers in general are not deficient in industry or enterprise; in the use of new appliances and improved machinery they are prompt to keep up with the times. It may be true, however, that a careful economy, which aims to prevent all waste and loss upon the farm, is not as characteristic of the American farmer as his push and drive. Some may have forgotten the proverb, A penny saved is as good as a penny earned.

A Never Failing Well, or spring, near the house and the barn, is a great desideratum, and it should be found in every pasture. In the drouth of the past summer, when so many wells have failed, some farmers have learned to their cost the value of a good supply of pure water. They have had to draw it from a long distance for family supply, and daily to drive cattle, miles to the nearest river or spring. This has taken a great deal of time and labor, and the cattle have grown thin under the scourge of scant forage, and thirst. The lesson is, to dig the well a few feet deeper, at whatever cost. Take up the curbing if there is soil at the bottom, and dig deeper. If there is rock at the bottom, drill with a two-inch bore, six or eight feet deeper, and explode giant powder, or dynamite and rend the rock in every direction. This will often reach some seam, and let water rush in. If the drive well has failed, get a new pipe, and drive it down several feet deeper. It is much cheaper to drive an iron pipe for a few feet more a day, than to drive cattle long distances for water.

A Home-Made Fertilizer Drill.

Mr. Wm. H. Ridge, Bucks Co., Pa., has made a fertilizer drill that does its work well. He writes us: In one year I think every neighbor will have one, from the way they used mine this year. It is the first one I ever saw, and of course there can be improvements made, but it will put on fertilizer better than any one can do it by hand. I bought a section of a large fertilizer drill, which cost $2.50, and made a light barrow, and put it on. I procured a section of a seed drill, and put that on also; 1 1/2-inch belt will run the fertilizer section, and 1/2-inch belt is strong enough for the seed section. Broom-corn seed is liable to arch, so I put a stirrer in mine. This drill will sow 200, 400, 700, or 950 lbs. to the acre, according to the size of pulleys. Figure 1 shows the home-made fertilizer drill, and fig. 2, as seen from above.

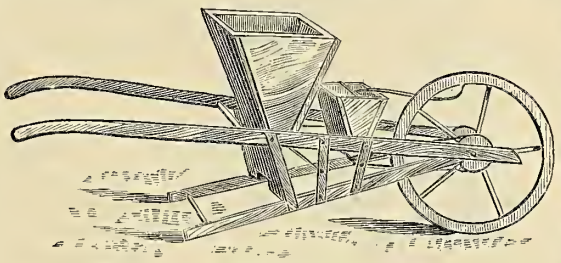


Fig. 1.—HOME-MADE FERTILIZER DRILL.

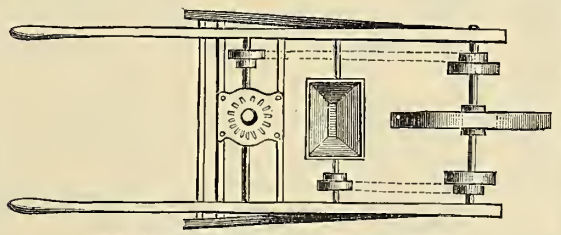


Fig. 2.—THE DRILL SEEN FROM ABOVE.

"High Farming" Does Pay.

A business man of our acquaintance, a few miles out from New York City, purchased some land near his homestead very rough and quite stony. The previous owner had planted it to potatoes some years, in others to corn, etc.,—applying more or less manure. The corn yield had varied from 24 to 40 bushels per acre, but averaged 30 bushels — all that could be expected from land in its condition. The new owner's "what I know about farming" had been mainly gleaned from the *American Agriculturist.* Having a little money to invest on interest, he decided to deposit it in that field.

Taking a month's vacation from business, and assuming personal direction, he hired 30 to 40 men who had just finished grading a railroad. These he set to work with spades, picks, and crowbars, along one side of the field, and they dug over the whole soil two feet deep, picking out all stones as large as a hen's egg. The larger boulders were broken up with sledge hammers or blasted, excepting a dozen or so that were six to ten feet through, which were tumbled into deep pits dug by their sides. Ditches were cut 20 feet apart, 4 1/2 feet deep, and 2 to 3 feet wide, which were half filled with the gathered stones, the larger, flattish ones being so placed in the bottom as to leave a continuous opening or drain. The top sods, weeds, and stubble, and 20 wagon loads per acre of coarse, cheap manure were dug into the lower 16 inches of the stirred soil, and 10 loads per acre of better manure were mixed with the upper 8 inches. Most of the better soil at the top was kept there by bastard trenching, that is, digging a ditch on one side, stirring the soil below, and moving the next top layer over on to it, repeating the process through the whole plot. When finished, this previously rough field was like a bed of fine garden soil. A walking cane could penetrate two feet deep with slight pushing. Every part is within 10 feet of a drain that carries off execss of water, and, as a consequence, may admit air into its open end to circulate through the soil.

The cost was $175 per acre for the spading, gathering stones, ditching, manure, etc. While at work, the owner was often asked by passers-by if he were digging a canal or building a railroad; and when to some neighboring farmers he replied that he was preparing that field to farm it for profit, they smiled at his "freshness," as they called it, and said in substance, "It's all very well for a man making money in city business to bury it in the soil, if he has a mind to, but it is nonsense for him to talk of doing this for profit."

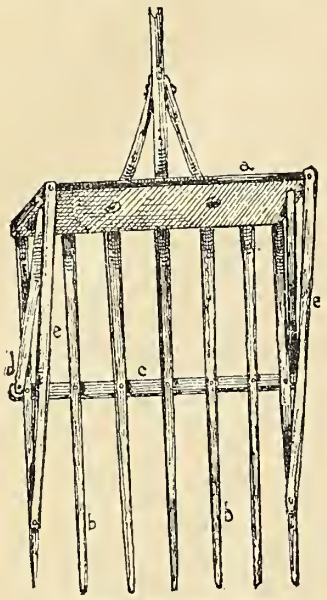
As might reasonably be expected, that garden-like soil has for years yielded an average of 76 bushels per acre of sound corn, and corresponding crops of potatoes. It costs less per acre than formerly to plow, to plant, and hoe the crops, the only additional expense being the harvesting of the 46 extra bushels of corn. This is more than repaid by the increased value of the corn-stalk fodder.

Does it pay? Let us see. The average price of corn here for a dozen years past has been over 70 cents per bushel; but call it only 60 cents, making $27.60 for the 46 extra bushels obtained. But $27.60 is about 16 per cent interest on the $175 expended in improving the soil. If the corn sold for only 38 cents per bushel, it would still pay over 10 per cent on the improvement. And this will go on perpetually, if the soil be kept loose by deep plowing. Let it be noted also, that crops on a soil thus prepared are measurably independent of rains and drouths. The drains speedily carry off excess of water; while the plant-roots penetrate the deep-stirred, aërated soil so far, that they find and carry up moisture in the driest weather, when those growing only near the surface are parched and stunted in a drouth.

An important lesson is taught by this and other similar examples. If all the owners of farms through the country, excepting those already in high tilth and fertility, would sell off enough of their land to supply funds to put the remainder in the best condition possible, their work would be lighter, and their profits from farming much greater. The folly of endeavoring to work too much land is constantly being illustrated by failures, foreclosures, etc. Be contented with fewer acres, and work them thoroughly.

A Leaf Fork.

Mr. G. B. Dyer, Scott Co., Tenn., sends us a sketch of a leaf fork: The head piece is a 3/4-inch oak board, *a*, 5 inches wide



A CONVENIENT LEAF FORK.

and 22 inches long. Tough oak prongs, *b*, *b*, seven in number, are fastened in 3/4-inch holes bored along the lower edge of the head piece. A cross piece, *c*, 1 1/2-inch wide, and 3/4-inch thick, bevelled in front, is nailed on the under side of the prongs, 9 inches from the head. Two rods connect the ends of this piece, *d*, with the top of the head-piece, to give the necessary strength. The fork may be further braced by two side pieces, *e*, *e*, which run from the head to near the ends of the outside prongs. They also help to hold the leaves on the fork. The handle may be a stout round pole, split into three parts and fastened to the head, as shown in the engraving.

Important to all Sending Poultry to Market.

New York City receives a large amount of poultry at all times of the year, both for its own consumption, and for over a million residents in Brooklyn, Jersey City, Hoboken, etc., which get their chief supplies in the Metropolitan markets. On the approach of the Thanksgiving and Christmas Holidays, the receipts are enormous. In former years we have given many hints to those sending poultry to this market, and emphasized the advice that the fowls should not be drawn, as they are for the Boston, Providence, and some other markets. But early in 1882 a strong effort was made by interested parties to secure a law requiring poultry to be drawn before sending it to market in this City. After much discussion, a compromise was effected, and the following ordinance was passed by the Board of Aldermen, and approved by the Mayor, which should be observed by all sending poultry to New York:

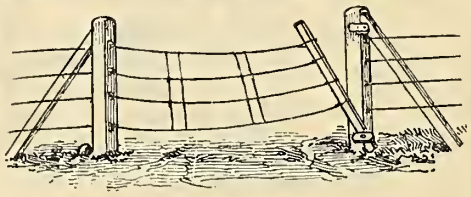
Section 1. That no turkeys or chickens be offered for sale in the City unless the crops of such turkeys and chickens are free from food or other substance and shrunken close to their bodies. That all fowls exposed for sale in violation of this ordinance shall be seized and condemned; such of them as shall be tainted shall, upon examination, be destroyed, and the rest fit for food shall be used in the public institutions of the City.

Sec. 2. Every person exposing for sale any chicken or turkey in contravention of this ordinance shall be liable to a penalty of FIVE DOLLARS for each chicken or turkey so exposed for sale. Sec. 3. This ordinance shall take effect on the first day of Oct., 1882.

This is much better than to require the poultry to be drawn, and may be complied with by *keeping all poultry from food for 12 hours* before killing. After October 1st, all sending poultry to New York should strictly observe this ordinance; otherwise they may be subjected to heavy losses, and those receiving their consignments may be greatly damaged. Send the poultry undrawn, but with empty crops, to be secured by 12 hours fasting before killing, as above.

A Wire Gate.

Mr. O. G. Nevins, Graham Co., Kans., writes us: On the plains here we use wire fences of necessity, and, as lumber is expensive (fence boards bringing $35 per M.), we even make a gate of wire. Provide two heavy fence posts; two stout poles for braces, 10 feet long; a round stick of tough wood, 5 feet long and 2 inches through at the larger end; two 1 1/2-inch pins, 8 inches long, and 3 or 4 wires 8 inches longer than the width of the gateway. Set the posts firmly, and after placing the braces outside of the gateway, attach the wires of the main fence. Bore 1 1/2-inch holes in that side of the post to which the wires are attached, and drive in



A WIRE GATE.

the pins. Fasten the gate wires to the other post with staples, and attach the loose ends to the five-foot pole. To shut the gate, take this pole or gate-head and put the lower end back of the lower pin, and spring the upper end behind the one above. If the wires are all of the right length they will be taut and firm. Two slats fastened to the gate wires will keep them from tangling. A short post set at one side of the gateway may be found convenient to hold the gate when open.

A Supply of Parsley in Winter.

Those who have a greenhouse can readily keep up a supply of Parsley all winter, but it is not difficult to do this in the kitchen where it is to be used. A few leaves of Parsley used as a garnishing to a dish of cold meats, etc., adds much brightness to the table, and Parsley is so useful in flavoring soups, etc., that it is worth the little trouble required to afford a supply through the colder months. Wherever there is room at a sunny window for pots, or a box of earth, a supply may be had. There are two methods of securing this: The seeds may be sown in pots or boxes of good soil, the sooner now the better. They are slow in germinating, and if they do not appear in four weeks one need not be discouraged. When well up, thin the plants so that they will be about three inches apart. As a general thing, a box is better than a pot, but in either case, watering and other care must be given as if it were a geranium in the parlor window. Another method is, to take up the plants that have been raised in the garden and set them in pots or boxes. In doing this, the long tap root may be cut off, and the outer leaves removed. When the plants get well established, a new growth will start and afford an abundance of leaves. After a while, these old plants will push up a flower stalk and cease to form new leaves; when they do this, they are of no further use. It may be well to have some plants raised from seed to take their places. Several years ago we described a beautiful object we saw in a friend's greenhouse, and as it will, no doubt, be useful to many, we here give it again in brief: A small barrel, with its hoops well nailed, had its staves bored all over with inch holes (or larger), about six inches apart. Parsley was taken up from the garden and all the larger leaves removed. A layer of soil was placed in the barrel, and a root of Parsley put at each hole, with its top pointing outwards, with a few roots at the top. At the time we saw it, this was a perfect cylinder of green foliage, the leaves having grown and completely hidden the barrel. If there is not room in the kitchen for a barrel, use a small keg.

A World-Wide Weed—The Canada Flea-bane.

A list of the weeds which infest cultivated grounds in this country, would probably show that nine-tenths of all were originally introduced from abroad—were foreigners. It is a singular fact that as aboriginal man has disappeared before the European, the native plants have, as a general thing, disappeared in the face of civilization, very few native species remaining to annoy the cultivator. Hence, as a rule, the weeds we have to contend with are those which have accompanied the settler from abroad, and which, finding a new soil and climate, have often flourished with an aggressive vigor not known to them in their own homes. But all rules have exceptions, and in this case we have a most marked one in the Canada Flea-bane (*Erigeron Canadense.*) As may be supposed, with a plant found all over the country, this has several common names. Belonging to a genus known in Europe as "Flea-bane," it seems desirable to retain that name, but in some localities it is known as "Horse-weed." In some Western States it is universally called "Mare's-tail," while at the South it is "Colt's-tail," names which the shape of the plant may in a measure warrant, but the origin of the name, "Butter-weed," as it is called in some Eastern States, is difficult to conjecture. In some places where it springs up in cleared land, we have known it to be called "Fire-weed," a name given to several different plants. In Pennsylvania, this, and some related species, are known as "Scabious" and "Scavish," names also given elsewhere to other plants. Of all these names, we prefer "Canada Flea-bane," as that has not been applied to any other plant. The genus *Erigeron* gets its name from the Greek for "spring," and "old-man," as some of the species bloom in early spring and have an abundance of whitish hairs. The genus includes about 100 species, mainly of temperate and mountainous regions. Most of them have the general appearance of an Aster, and they are only separated from that genus by minute botanical characters. Some of the Erigerons are so showy that they are culti-

vated as ornamental plants. The coarsest and least attractive is the one under notice, the "Canada Flea-bane." This plant, common as it is, does not seem to be generally known, at least by name, as each year specimens are sent to us for a name, and as an unusual number have come this season, we give an engraving of the top of the plant, as it usually appears, which will allow it to be identified. The plant is an annual, growing from a few inches to six feet or more in hight; it is coarsely hairy, with long narrow leaves. Above, it branches more or less, and bears a multitude of inconspicuous heads, a fourth of an inch in diameter or less, each with from two to a dozen florets. The fruits (seeds) each have an abundant hairy tuft, (*pappus*,) which assists in their distribution by the wind. In this country the plant is found everywhere North and South, from the Atlantic to the Pacific, but varying greatly in size with the locality. We have seen it in a Michigan clearing forming an almost impenetrable thicket, six feet or more high. In the arid country on our Mexican border (now Arizona,) we have found the same plant not over three inches high, bearing three or four heads, and as unlike in appearance to the one growing in rich soil as can be imagined. If we are indebted to other countries for most of our weeds, we have in part offset the obligation by sending them this. There is probably no country on the globe where the soil is cultivated into which this weed has not penetrated. This plant was known in cultivation in a botanical garden in Europe as early as 1624, and it is supposed to have been distributed from that point. Though we have, so to speak, stocked the world, we still have left at home "enough for seed." By the road sides, in clearings, in fields, and in gardens, it lifts its unsightly head. The fact that it is an annual is the only thing that can be cited in its favor. It must give way to good cultivation. That it is found at all of a sufficient age to ripen its seeds, simply shows neglect on the part of the farmer or gardener. If it has been allowed to get large, pull it, but do not put it in the compost heap, where its seeds will surely mature and be carried out with the manure, but burn and make an end of it. It would be well if all our troublesome weeds could be so easily subdued as this one.

THE CANADA FLEA-BANE (*Erigeron Canadense*).

A CULTIVATED VERNONIA (*Vernonia Arkansana*).

Vernonias—Wild and Cultivated.

Some plants are despised by one set of cultivators and valued by another. Such is the case with the Vernonias, which have now and then been sent to us as troublesome weeds, to be named; yet the same plants, especially in Europe, are valued in ornamental gardening. The genus *Vernonia* was named in honor of an English botanist, Vernon, who travelled in this country many years ago; it now includes nearly 400 species, mostly belonging to the tropics of both hemispheres; about 10 of them are natives within our own borders. As a general thing, they are sturdy, perennial plants, 2 to 12 feet high, branching above and bearing numerous, rather small, thistle-like heads of flowers, which are purple or rose colored, and rarely white, with the general structure of the great composite family to which it belongs. The engraving gives the general appearance of the upper portion of one of these plants. The species is *Vernonia Arkansana*, which we have cultivated for several years. This and others are showy plants, which may be cultivated where sufficient room can be given them, as their rich purple flowers come in August, a month in which most plants forget to bloom. So far as gardening is concerned, several of the native species are much alike in effect, differing only in botanical characters, and any of them may be properly introduced in a spacious garden. In good soil they make large clumps, six feet or more high, with a vigorous, robust appearance that is very pleasing. But we have also to regard the Iron-weeds as weeds. The commonest species, though named "New York Iron-weed," (*V. Noveboracensis*,) is by no means local, but is found in all the Eastern States from Maine to Florida. It grows from two to eight feet high, and in flower is quite as showy as any, with the general appearance of the one figured. It is very apt to spring up in the farmer's meadows, especially if they are at all wet, and while it is not as aggressive as some other weeds, it deprives the grass of a large amount of food, and should be eradicated. We must reply, to those who ask about this, and other plants which appear as weeds, that we know of no application that will kill an undesirable plant and not injure those that we wish to encourage. A little labor in grubbing out the Iron-weeds will keep them in proper subjection.

The Common Pigeon-berry, or Poke.

This widely-distributed plant is, during the spring and summer, a fine example of vigorous growth. Were it an exotic, costly to procure, and difficult to cultivate, how it would be valued! When the growth is completed, and the abundant berries begin to ripen, the whole plant shares in the change from pale green to the richest crimson. Long before frosts are thought of, this change begins with the painting of the stem, and the coloring goes on from day to day in a most striking manner. No doubt all who live in the country know the Pigeon-berry, or Poke. It has a large branching root, six inches or more through, from which arises a stout, branching, leafy stem six, and in rich ground, eight feet high. The racemes of greenish-white flowers are not showy, but these are succeeded by graceful clusters, six inches or more long, of flattened berries, which are at first green, then crimson, and finally of the richest blackish-purple. When the fruit is ripe, the stems of the plant also show ripeness, and are beautifully striped with crimson, while the leaves at this time are of a fine yellow color, with crimson veins. We do not wonder that the Europeans esteem it as an ornamental plant. The fact that it was found to be hardy in a garden in Berlin was a few years ago quoted in all the horticultural journals of Europe. In its maturity the plant is suspicious, as the berries and the root have active medicinal properties. Not so the young shoots, as they push up from the bulky root in spring. Taken when they first appear, with their undeveloped leaves, like asparagus, they are by many preferred to that vegetable. Served like asparagus, they are excellent, and whatever active principle they may possess is dissipated in the cooking. We have much respect for a lady in a Western State, who, having introduced the plant into cultivation, wrote an account of it, which we published in July, 1879. Like many other widely distributed native plants, this has

A Number of Common Names.

Besides "Pigeon-berry" and "Poke," it is known in different parts of the country as "Garget," "Cancer Root," "Coeum," "Scoke," "Skoka," and "Pecatacelleloe." This last, while it may be a common name, can hardly ever become a popular one. Those who find botanical terms difficult, will, we think, prefer *Phytolacca decandra*, the scientific name of the plant, to that. The fresh juice of the berries is of the richest possible purple, but, as many a schoolboy who has used it as red ink has learned to his disgust, it is not permanent. The attempts to fix the color as a dye, by the use of various mordants, have not been very successful. Over two centuries ago the plant was introduced into Portugal, and its berries were used to give port wine, which is naturally pale, a rich color. Its use in wine was prohibited by royal edict, "on pain of death, as it injured the flavor." As a consequence, port wine is now colored by the juice of the Elderberry. The root is the most active part of the plant, causing violent vomiting and purging; as it appears to have marked narcotic properties also, it is evidently a thing not to be incautiously meddled with. Externally, in the form of ointment, it has been found useful in skin diseases of domestic animals, especially the mange in dogs, and for garget in cows. The stems of the plant

Have a Peculiar Pith,

which we have not seen mentioned in any description. If a mature stem be cut open, the pith will be found as a series of disks, placed one upon another. Each disk consists of a ring of pith about a fourth of an inch high, across which is stretched a thin transparent membrane, reminding one of a miniature tambourine. This is only mentioned in the hope that some one may throw some light upon the reason for this peculiarity.

FLOWER CLUSTER AND LEAVES OF THE POKE OR PIGEON-BERRY.

Timely Suggestions on Cider Making.

If apples are converted into vinegar, which is often the most profitable use for them, no special care is required. The apples may be ground and pressed whenever convenient, and the more rapid the fermentation, the better. To make the best cider, the time for pressing the juice, and the temperature at which it is fermented, are of great importance. By cider, we refer to the fermented juice of the apple. Apple juice is sometimes prevented from undergoing fermentation by adding Sulphite of Lime, and other chemicals. Unfermented apple juice is not cider. If one wishes to preserve apple juice in this condition, heat it to the boiling point, bottle, and then cork securely, as in canning fruits.

The old-fashioned and picturesque cider press and mill have nearly disappeared, but several smaller and more effective machines have taken their places. These not only occupy less room, but they are so much more powerful, that they give a greater yield of juice. Orchardists who market the bulk of their fruit, find that it pays to have a portable mill for the conversion of wind-falls and inferior apples into cider, to be made into vinegar. One large orchardist in Indiana, assures us that he finds a large share of his profits from thus utilizing the poor fruit.

While the best cider will make the best vinegar, that made of the poorest apples is so much better than the whiskey vinegar commonly sold, that it is worth while to use all the apples not otherwise disposed of, in the form of vinegar. Each locality has its favorite cider apples; those regarded as best ripen with the light frosts of November, at a season when the temperature is most favorable for the best product. For the best cider, use only sound apples; all inferior fruit should go into vinegar. When the juice is pressed, whether in the old-fashioned press with cheeses laid up with straw, or in a modern press, it will be well to strain the juice, as it flows from the press, by letting it run through a piece of gunny-bag, or a hair sieve. If not new, the barrels should be perfectly clean, and placed in a cool cellar. There are two methods of fermentation. One is to fill the barrels quite to the bung, and as the froth from fermentation runs over, keep the barrels full with some of the juice saved for the purpose. When the fermentation ceases, the barrels are bunged tight, and allowed to remain for a while.

The contents are then to be racked off into a new or perfectly clean barrel. This barrel is prepared by putting into it about three gallons of cider, and burning in it a strip of cloth, that has been dipped in melted brimstone. The barrel after lighting the brimstone should be bunged, the flame will soon be extinguished, when the torch is to be removed, and the barrel well shaken, that the cider within may absorb the fumes. The barrel is then to be filled from those in which the fermentation took place, drawing at a short distance above the bottom, to avoid any lees or sediment. Cider thus treated will keep a long time. Another method is to fit one end of a tube, bent twice at right angles, or curved, to the wooden bung or large cork. The tube may be of glass or tin, with its other end immersed in a cup of water. The gas produced by fermentation will escape, and no air enter. Cider fermented in this manner, and carefully racked off after the fermentation is complete, is so superior to that made in the ordinary rough methods, as to merit the name given to it by the Germans, of *Apfel Wein*. In making vinegar, we have another kind of fermentation, and need free exposure to the atmosphere. Those who make vinegar on a large scale, and wish to work in the most rapid manner, have a house which they can keep heated to about 70° in winter. They know how much old vinegar helps the change of cider into vinegar, hence keep up a constant drawing from cask to cask. This frequent change and exposure to the air, is also beneficial, as is the addition of vinegar "mother" to cider.

A Clump of Chives.—Chopped onion is not so desirable for flavoring potato salad as the finely chopped green leaves of Chives. For imparting an onion-like flavor to soups and stews, Chives are valued by many. It is an old-fashioned plant of the onion family, to be found, as a general

thing, only in old gardens. If one has but a single clump of this, it is his own fault if he has not always an abundance. A part of a clump, divided in spring into small tufts of a few of the tiny bulbs each, and set out, will multiply, and make a large mass by fall. The market gardeners place the Chives in frames, or cover them in the bed with a frame and sash, and thus slightly force them to supply the city markets in early spring. A supply can easily be forced in the kitchen. Before the ground freezes, the later the better, take up one or more clumps and place them in pots or a box—an old tomato can will answer, in any case using soil to fill in all spaces. It is a plant that starts very early in spring, and requires very little heat to induce growth; hence a cool window will be better for it than a warm one. If there is much demand for Chives for flavoring salads, it will be well to have several clumps.

The Russian Mulberry in Nebraska.

G. F. Clark, Gage Co., Neb., who lives near a colony of the Mennonites, gives us this account of their Mulberry tree planting:

The Russian Mulberry was introduced into their European colonies by the Russian government for the purpose of silk culture and to shade and improve the land. They were compelled to buy these trees of the government—each landholder being obliged to plant a certain number. After cultivating them until they found out their value, they voluntarily planted the trees very extensively, and learned that silk culture was not the only object in raising them. They found the timber very valuable for fence-posts, outlasting any other Russian timber. It was also found profitable for cabinet work, and one of the most desirable trees for fuel, besides it bore edible fruit which was marketable in Russia. When the Mennonites came to this country, they brought the seeds of this tree with them, together with those of several other trees, but planted these more extensively than all others combined. The Russian Mulberry is a very rapid grower. Trees, the seed of which was planted by the Mennonites, are now 20 feet high and large enough for fence-posts. They grow very large and bear abundant crops. The fruit resembles the blackberry in appearance, a large share being black, marked with reddish white. They vary in flavor from acid to sweet. The growth of this tree is like that of the apple tree. Many of the leaves have the margin with from 5 to 12 lobes. The Mennonites use it as an ornamental hedge plant, it makes a beautiful fence, and will stand shearing as well as any tree. By some, this tree is regarded as the most hardy Mulberry, and the best suited for silk culture in northern localities. The Mennonites have interested themselves in the silk business to some extent since they have been in this country, and raised some cocoons for sale.

A Quick-Growing Vine.—For a vine to quickly cover a trellis or the unsightly side of a building, and be permanent, a grape-vine will often answer better than any other. One of the rampant growing sorts will give, besides the desired foliage, more or less fruit. In situations where fruit is undesirable and left out of question, we know of no grape-vine that, for its foliage only, is equal to the "Taylor" or "Taylor's Bullit." It bears poor, ragged bunches of indifferent fruit, but for foliage we do not know its equal. Extremely vigorous in its growth, it bears leaves of a handsomely cut outline and of a very dark green color. We have a vine of this variety placed against an out-building, and its luxuriance and the great beauty of its foliage quite reconciled us to its poor crops of fruit.

Notes from the Pines.

Many years ago I passed a couple of winters in the city. The house, like most city houses, had that most useless of all rooms, a parlor, with the two regulation windows facing the street. What to place in these windows to make the house appear cheerful from the street, was the question. A happy thought suggested "Evergreens." It was over 20 years ago, when some plants now popular were but little known. The genus *Retinispora* (or "Retinospora," as it is incorrectly written by some,) has been reduced to *Thuja*, the genus of our well known Arbor-vitæ. Japanese Arbor-vitæ answers well as a name for these trees, which are among the most manageable of all evergreens, and which vary not only in shape of foliage, but in their color, to such an extent that a collection of the different forms will give a most pleasing variety. Fortunately, I not only fixed upon evergreens for the window plants, but upon what were then known as Retinisporas. Such varieties as the nurseries then afforded were procured, and planted out in boxes of a size to fit the windows. They were of common pine, and had a galvanized iron tray to fit the interior.

RETINISPORA LEPTOCLADA.

The room, like most city parlors, was sufficiently warmed by the furnace to prevent freezing, yet not too warm for the Retinisporas, which were of bushy form, and all less than three feet high. They were planted closely in the boxes, to form a sort of hedge. The surface of the soil was covered with common sphagnum moss, to prevent drying out. These plants did good service all winter. When spring came, they were set out in the back yard to take their chances. They all did well, and the next fall were again placed in their boxes, and made a good screen for another winter. No doubt they could have been used in this manner for several winters, but we moved into the country after the second winter, and they were moved with the rest of the furniture and planted in the open ground, where they are yet.

These so-called Retinisporas

are among the most manageable of all evergreens. They can be very readily raised from cuttings. A bit three or four inches long, put into sand, or very sandy soil, will make roots almost as certainly as a Verbena cutting, though it may be longer about it. When rooted, the plant will stand almost any treatment. If needed as a pot plant, pot it, and clip it, and it may be kept for years of any fancied size. If wanted for edgings, strike the cuttings, plant them closely in a row, and they may be kept a long time at any desired hight. If an ornamental hedge is desired, let them grow to the required hight (and they grow quite rapidly), and keep them there by trimming. But to see them in their greatest beauty, they should be grown as isolated trees, with room to develop, when they will form beautiful specimens, furnished with branches from the very base.

While the Trees are Properly Thujas,

they are known, and probably will long be recorded in the nursery catalogues as *Retinisporas*, as that will answer as their trade name. They are now to be had in most nurseries in this country, and they appear to have long been favorites with the Japanese, who have propagated a large number of varieties. I have had the longest experience with that variety known in the catalogues as

Retinispora plumosa aurea,

and a brighter, more manageable evergreen (only it is ever yellow at the tips,) it would be difficult to find. A lover of plants has only to get a bit of this, and he can make what he pleases of it—a tree of 4 inches or 6 feet high in a short time. The catalogues properly keep up the names of the several varieties, though they are all to be traced to two variable species, *Thuja pisifera*, and *T. obtusa*. The variety known as *R. leptoclada* (slender stemmed), is a capital plant for out-door or pot culture. Its foliage has a peculiar bluish-green color, which makes a pleasing contrast with those varieties that have yellow or "golden" tips. A number of conifers have their spray tipped with yellow, but lose it in winter. The variety known as *plumosa aurea* holds this better than most others, and is a capital plant to employ for the winter decoration of beds in the lawn which are to be seen from the windows.

----Of late the writers in English journals have had much to say about the greater

Richness in the Color of Autumn Flowers,

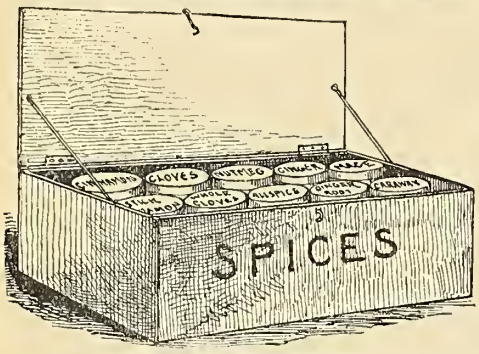
as compared with those of spring. No doubt this difference is noticeable, even in the more equable climate of the British Isles. With us the contrast is most striking. While the majority (not all) of our early wild flowers have delicate shades and tints, in autumn the colors are positive and glowing. At every hand we meet with scarlet, crimson, and rich purples, which prevent the all-pervading yellow of the Golden-rods and related plants from being monotonous. When the flowers have nearly satiated us with rich colors, the leaves take it up, and the season usually ends in a "blaze of glory." The brilliant hues of our forest leaves are not due

To Frost, but to Ripeness.

If one will carefully observe, he will find that the brightest and richest colors are assumed by the leaves of the maples and others long before there is even a slight frost.

Box for Holding Spices.

Many steps can he saved in doing housework, by having the various articles required kept together, and near at hand. A wooden box for holding spices, like the one shown in the engraving, is a most convenient little affair. It is large enough to hold ten medium sized baking powder tin cans, holding half a pint each. A lid is fastened on with small hinges, and provided with a hook for closing. A narrow strip of leather is tacked from the inside of the lid, to the inside of each end of the box, to



A CONVENIENT SPICE BOX.

prevent the lid from opening too far. The name of the spice contained, is marked on the top of each can, with common white paint. The letters may first be drawn with a lead-pencil, to serve as a guide for the brush. The outside of the box may be finished in any way to suit the taste. Ours is stained to imitate oak, with the word "Spices," in dark-brown on the front. To make the box more ornamental, a pattern may he cut out of heavy paper, and fastened to the wood with mucilage. After the staining has been applied, and the paper taken off, the pattern will look as if inlaid. The staining should imitate walnut or some dark wood. A good design is a small group of leaves in each corner. The veins and a little shading may be put on the leaves after the paper is taken off, by using a small brush and the staining liquid. A simple border might be put around the top of the box and the lid.

Foot Scrapers, or Boot Cleaners.

Some people (men in particular,) do not pay due attention to the removal of dirt from their boots and shoes, and often walk into a kitchen or sitting

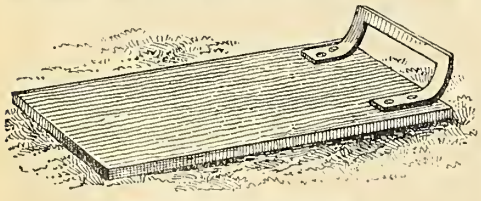


Fig. 1.—A FOOT SCRAPER.

room, upon a clean floor or carpet, with much mud and dirt adhering to their foot-gear. This may he prevented by placing a boot scraper or cleaner near the door, and in laying walks between the house

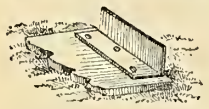


Fig. 2.

Fig. 3.

and the barn, and other out-buildings. To aid those who desire to make boot cleaners, I herewith present several, and of sufficient variety, so that there need he no excuse for an absence of this necessary article near the door. Any of the forms shown may he attached to the step at the door, or secured to a piece of hoard one inch thick, one foot wide, and about two feet in length. The scrapers shown in figures 1, and 2, are of iron, and attached by screws to the bottom piece. A blacksmith can hend an old piece of iron into the form desired. Figure 3 shows a piece of hard-wood, one foot in length, four inches wide, and nearly one inch thick, with one edge made quite sharp, the whole being nailed firmly to the end of a piece of board. The plan shown in fig. 4, consists of two wooden pins one inch in diameter, firmly secured in holes made in the bottom hoard near one end, three inches from which is a bar *b*, either of hard-wood or of iron, fastened upon the pins. This form has some advantages, as the tops of the pins, if made flat and sharp, will aid in cleaning the sides of boots. A mat should be provided, and in absence of anything better, a piece of old carpet will serve a most excellent purpose. The house-keeper may need occasionally to refer the careless members of the family to the foot scraper and mat.

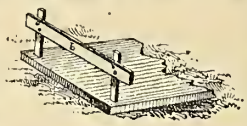


Fig. 4.

Woman's Dress.—The Corset.

I heard a group of children talking about corsets the other day, and it was easy to see the effect upon them of home education, or of daily example. Those who had seen the women about them habitually dressed with corsets, regarded such articles as a necessary part of a well-dressed woman's wardrobe, and looked forward to wearing the same as a matter of course. They seemed to think they could not have good forms, "stylish figures," without such mechanical aid.

Other children, who had never seen their mother wearing a corset, said, "How queer! just as if the natural figure was not good enough," and they began to speak of the evils of tight lacing. Their companions, like most women, asserted that few women wear their corsets very tight now-a-days, and that their friends in particular did not, and while corsets did no harm, they very much improved the human figure.

Corsets certainly are not worn as tight as they formerly were. Fashion allows much larger waists, and partly to this is due the better average health of women now, and partly to thicker-soled shoes, and better covered arms and shoulders. Formerly they were laced in front, and foolish women drew the lacing as tight as possible, often asking help to increase the tension. Though fewer corsets were worn, there was more "tight dressing" than now, for the dress-waists were lined with the strongest, most unyielding material, and fitted as close as possible.

Friends of the corset claim that it affords needed support to the upper part of the figure, and protection to the lower portion from the pressure of bands, and the weight of skirts. But would all female health and beauty fail, and woman remain a mere wreck, and monstrosity, had the corset not been invented? In Anthon's "Roman Antiquities," we read: "Stays for compressing the form into an unnatural appearance of slimness, were not known to the ancients, and would have been an abomination in their eyes." Artificial support of the bust is rarely needed, and such support should come from above, rather than from below, as seemed good to "portly Roman dames" of old. The abdomen does indeed need protection from encircling bands, and dragging skirts. The quickest and surest way, is to abolish close bands and heavy skirts. The corset affords no real protection. It only deadens the sensibility by its steady pressure, and distributes the weight more evenly over the back, hips, etc. This pressure is one of the most common causes and aggravations of those troubles classed as "female weaknesses." These is no need of close bands upon lower garments, and heavy skirts suspended from the hips. A rational style of dress will not include heavy skirts at all—only those that are short and light, and all bands may be fastened to rows of buttons, sewed upon the bottom of a loosely fitting under-waist. Many women now wear under-clothing arranged in this manner.

We are offered various improved corsets, made with shoulder-straps, to support all weight from the shoulders. But the sloping shoulders of women are not adapted to bearing heavy burdens, and many women refuse to wear shoulder straps, they prefer the equal pressure of the unsupported corset, weighted by skirts heavily trimmed, to suspenders or straps upon the shoulders. The combination suit or "chimeloon"—is the best way out of the difficulty—that and light plain skirts.

The temptation to tight-lacing is not so great as formerly, now that corsets are fitted by measure, and then fastened in front with steel hooks. But almost every corset-wearer would find her waist expanding in size, should she leave off the corset, and wear really loose clothing. The corset-steel is one of the worst features. The pressure upon the stomach and thus upon the nerves back of the stomach, results in weakness and general invalidism. Many corset-wearers imagine that the corset is a real support to the strength, because they feel "all gone" without it. This only shows how much mischief the corset has already done. Their feelings are all unnatural. The muscles of the waist and abdomen have lost their native power through confinement. If the toggery worn in the shape of basques and skirts, with hands and weights, oppresses and torments her when the corset is removed, the toggery should certainly be reformed, and the muscles given a chance to recover their lost power. Physicians have always condemned the corset as prejudicial to health, and the best artists have condemned it as distorting woman's natural form, and detrimental to real grace and beauty. But there is little hope of woman's emancipation in large numbers, from these bonds, so long as closely fitted waists, and especially basques prevail.

Travelling Case.

When going on even a short journey, one often wishes to carry some articles that may be packed in a small, compact dressing case, which will take little space in a valise or hand-bag. Travelling

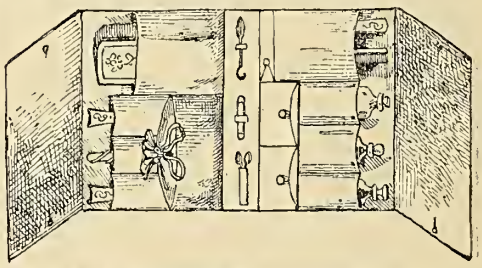


Fig. 1.—INTERIOR OF TRAVELLING CASE.

dressing cases of all degrees of elegance can be purchased, but a very convenient one may he made at home with little work and at small cost. The case here illustrated is made of heavy linen canvas, lined with ruhber cloth. Any other material preferred may be used for the outside, but the lining

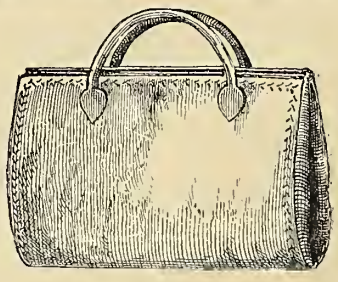


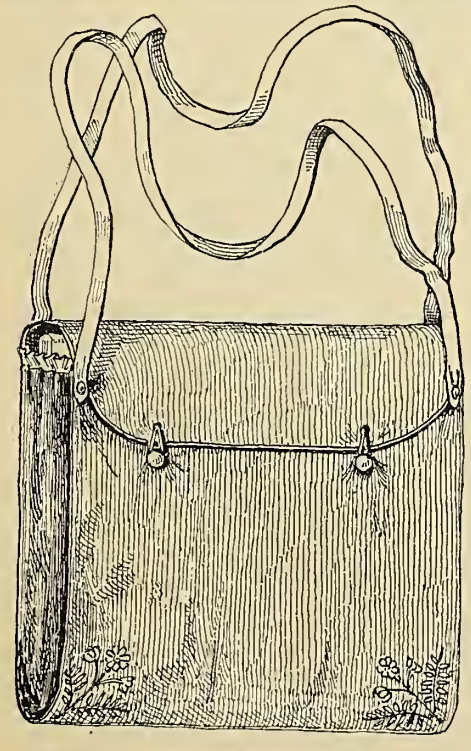
Fig. 2.—THE FINISHED CASE.

should be of ruhber cloth, which is on sale generally, and is not expensive. It is usually a light gray color, and is not so heavy as the oil cloth often used. For an intermediate lining between the ruhber and outside canvas, drilling is well suited, though any strong material may be used. Cut the rubber cloth and lining in pieces 12 inches.

wide and 22 inches long, and baste them smoothly together. The pockets are all made of the rubber cloth only, and the top of each is bound with ribbon before they are put on. For the side holding the comb, brush, and bottles, cut one piece 5 inches deep and 10 inches long, and put this on as shown in the illustration, its top being within 2 inches of the edge of the back of the case. Full it in at the bottom to 8 inches in length. Stitch it twice, to make three equal divisions.—Below this put a pocket 3 inches deep and 8 inches long; divide it in the center, and provide with two flaps. At its side is a small pocket, an inch deep and 4 inches long. Above the small pocket is one for comb and brush, 7 inches deep and 5 inches wide. One inch of the five is fulled in. Put a piece 9 inches long and 6 inches deep, with its top an inch from the edge of the case, and full it in to 7 inches wide, and divide it into three pockets. Below this make a sponge pocket of a piece 4 inches deep and 9 inches long, and a piece 4 inches deep by 16 long. Sew these on with its edge an inch over the brush pockets. Join the narrow edges of the long strip, and sew it to the top of the pocket and along the back an inch above the lower edge of the upper pocket. Cut eyelets in the upper edge of the strip, and insert cord for drawing up. For the clothes-brush pocket, cut a piece 5 inches wide by 8 long, and put it on to come within 3 inches of the edge of the case. In the 2 inches of space between the sides put a small pocket for scissors, and loops for knife and button-hook. Across each end of the case sew flaps of rubber cloth, 10 by 12 inches, with the wrong side of the seam on the outside of the case. Cut button-holes in each side, and sew buttons on to correspond, for fastening the flap over the pockets. For the outside, cut the canvas 12 inches wide and 22 long. After it has been ornamented around the edge with a border in cross-stitch, baste the two smoothly together, and bind around with braid or ribbon. The handles are made of the canvas, and stitched on last.

Satchel for School Books.

It often happens that children have to walk quite a distance to school, and they should be provided with a satchel for carrying books and luncheon. It should be large enough to hold an atlas, and have long straps for suspending it over the shoulder. To make one, cut a piece of heavy linen, or Burlap



A SATCHEL FOR SCHOOL BOOKS.

canvas, twenty-four inches long, and fourteen wide, two pieces fourteen inches long, and four wide, and one fourteen inches long, and eight wide. Double the largest piece in the middle, and sew the two pieces in at the sides, as shown in the illustration. They should be fulled in at the bottom and a strong rubber cord run in a casing, to draw them at the top. Sew the other piece to the back, after the front has been rounded and bound with braid. Sew two buttons on the front, and two loops on the flap as fastenings. The straps are made of strips two inches wide, doubled, and stitched together, and fastened to the satchel with buttons. The seams may all be made on the right side, and bound with red braid, but if put on the wrong side, they should be over-cast, for the satchel does not need lining. A pattern in red wool may be worked in each lower corner.

Fancy Knick-knacks, and Writing Paper.

Fancy-work now has such a prominent part in household adornment, and adds so much to the beauty and attractiveness of home, that few women can afford to neglect it. Embroidery, both in Kensington stitch, and laid work, was never more fashionable than at present, for either fall costumes and mantles, or for lambrequins and table scarfs, while it is extensively used on panels and birthday cards. It is exceedingly beautiful when worked on light satins. One that we recently saw had water lilies in raised work, while a back-ground of sky, rushes, and birds in flight, was painted in. The two arts—embroidery and painting—are so similar in their effects, that they can very well go hand in hand. We frequently hear complaints of the expensiveness of having articles stamped, but this has now been lessened by a device, which allows every one to do her own stamping at small cost. Handsome designs for table-cloths, piano-covers, or lambrequins, come printed on paper, in six-yard lengths, for 25 cents, while small bouquets of flowers are as low as seven or eight cents. If the paper is carefully basted on the cloth, and ironed with a hot iron, the pattern will be completely transferred.

The English crewels are the finest, and least likely to fade, but are double the price of the American, so the Columbia crewels are the most extensively used, and will last fresh and bright for a long time. For Thanksgiving dinners, and other occasions, pretty little doilies, or finger-bowl napkins, are being outlined in cunning designs of fruit, flowers, or figures, on small squares of fringed linen. These may be done in either silk, crewels, or better still, the washing cottons, which come in exquisite shades, and it is said can be laundried without fear of fading.

AN "OWL" PANEL WITH ITS LUNAR INVITATION.

For those who paint, even but a little, there are hundreds of pretty things to be made, and one of the most common, is oil-painting upon common China floor-matting. The cutest screen we have seen of late, is done in black and neutral tints on this material. The design represents a branch of a tree, upon which are seated two wise-looking owls, one of whom has his head bandaged up, while the other eyes him severely, and is supposed to be asking the question which is printed above—"Where have you been owl night?"

The prettiest dinner cards are painted in water-colors, and it would be well for young ladies to practice this charming art, as so much can be done with it. For amateurs, there are color boxes which come as low as $1.25. They can be readily found and contain all the colors required, besides Chinese white, sepia, and four brushes. One can easily be carried in the pocket, and is accompanied by full directions for using. The owl is evidently the favorite bird this season, and appears in great variety, seeming to have quite taken the place of the long-legged storks. The funny little panel of which an illustration is here given, will be found very salable at the fancy fairs, which will soon be held in anticipation of the holidays. The owls are made from peanuts, the eyes being painted in with yellow and black, while the wings are merely two small downy chicken feathers, attached to the sides with mucilage. A pine twig is tacked on with a few stitches to a note card, and on this the "birds" are firmly glued, while the branch is fastened near the end with a bow of narrow blue and cardinal ribbon. A crescent moon, and any appropriate motto or sentence may be painted above the friendly "owls."

In letter and note paper, the styles are as many and varied as the tastes of the people who use them. We would give the preference to the delicate tints, with a flight of birds, crescent moon, or dainty purple pansy, in embossed stamping, ornamenting one corner. The "alligator skin," however, is considered very stylish. It is rough, of a light *café-au-lait* hue, and somewhat resembles parchment, but it divides the choice with the terra-cotta, and cadet blue paper, both of which stand high in favor with city people at the present time.

Canning Tomatoes.—By "C. H. D.," Carroll Co., Md. "Take perfectly ripe tomatoes, scald and remove the skins, keeping the fruit as whole as possible. Place in a preserving kettle, cover, heat up slowly, and cook until they are boiling hot all through. Put in cans or jars and cover tightly. Do not add any water in cooking, as a good tomato will of itself afford plenty of juice.

The Doctor's Talks.

I am always glad when my young friends ask about common things. Concerning articles in common use, we often take no thought as to where they come from, or how they are prepared. "H. T. W.," asks a question that many older persons would like to have answered. He says: "We sometimes have cocoa for breakfast instead of coffee, is this made from the cocoanut? The cocoa bought at the store, is in irregular bits, like something larger that had been broken up, and though I have had a whole cocoanut, I find nothing in it like this."

Fig. 1.—BRANCH OF COCOA, WITH LEAVES, FLOWERS, AND FRUIT.

Cocoa, and Cocoanut,

are names in common use for two very distinct products. Singularly enough, neither name is correct, and these show that slight changes in spelling may become established by long use, and lead to confusion. The cocoanut grows in tropical countries, upon a tall kind of palm-tree. The nut is not now brought here in its original state so much as formerly. When it comes from the tree it is about a foot long, and is three-sided. The outer part is a thick, tough, stringy husk. To save room, the nuts are now brought to market without the bulky husk. As most of you know, they are more or less

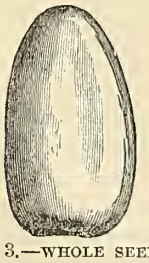


Fig. 3.—WHOLE SEED.

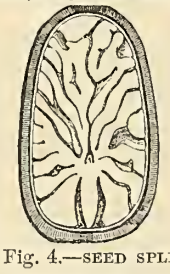


Fig. 4.—SEED SPLIT.

oval, about the size of a pint pot, and have a very hard shell. At one end of this shell are three roundish spots, one of which is soft, and easily cut into with a knife, while the other two are like the rest of the shell. It is from this soft spot that the germ or young tree pushes when the nut is planted. The shell is lined with a rather tough, white flesh or "meat," and in the hollow of this is a sweetish liquid known as the "milk." The "meat" is eaten, and used in some kinds of cookery; the hard shell is made into dippers, and ornamental boxes, while the coarse fibres of the outer husk is made into ropes, and the coarse but strong material known as "coir matting." Those who have seen the cocoanut, no doubt recollect the three spots at one end. These give that end a strong resemblance to a monkey's face, two of them answering for eyes, the other for the mouth, while between is a projecting portion, that will answer very well for a monkey's nose. It is from this that the Portugese, when they first met with the nut, called it the *coco*, which in their language is the name for a mask. Hence the original name was

Coco—and not Cocoa-nut.

But usage has made it cocoa in our language, and so it will no doubt remain. The cocoa we use as a beverage, is prepared from a nut, but the product of a tree very different from the one just mentioned. When the Spaniards first visited Mexico, they found that the native Indians used a drink which they called *cacao*, made from the nuts of the Cacao-tree. The Spaniards introduced the nuts into Europe with the native name. When the English began to use it, strangely enough they in time altered the name to cocoa, as they had altered the name "coco-nut" to cocoa-nut. We have in these two products curious instances of the manner in which common names will get changed. Our cocoa-nut should be "coco-nut," and our "cocoa," the beverage, should properly be Cacao, but both have been altered to cocoa. With this explanation, it is easy to see that much confusion has followed, and "H. T. W." is not the only one who has been puzzled by it... But my young friend wishes to know

About Cocoa, and how it is Prepared for Use.

As already stated, the Spaniards found the tree in Mexico; it is also a native of Central America, generally, and of several of the West Indies. The tree is a small one, usually not over 20 feet high; it has large, pointed leaves, and small, rose-colored flowers, which are followed by a fruit or pod, 6 to 10 inches long. Figure 1 shows a branch with leaves, flowers, and fruit, but all much smaller than the real size. The fruit when green looks a good deal like a cucumber; it is yellowish when ripe. It is then gathered and split open, and the seeds, which are in a sort of spongy pulp, are removed. The trees of the different countries vary greatly in the size of the fruit, and the number of the seeds; while some contain only 30, others have over 100 seeds. The engraving, fig. 2, much smaller than the pod itself, shows its shape, and the arrangement of the seeds, while in figs. 3 and 4 a whole seed, and one split open, of the natural size. The seeds are placed in boxes or in pits to ferment for a few days, and are then spread in the sun to dry, when they are ready for export. This fermenting is said to make the seeds less bitter, and to render them more solid. The greater share of the cocoa used throughout the world, is supplied by Trinidad, but that from Central America is regarded as the best. (If you do not know where Trinidad is, stop right here, and find out from your geography.) The botanical name of the tree is *Theobroma Cacao*, the first or generic name being a fanciful one, given it by Linnæus, and is made up of Greek words, meaning "Food for the gods," while the specific name is the Mexican *Cacao*. From the cocoa *beans*, or seeds, are made cocoa, cocoa-shells, chocolate, etc.

Cocoa proper, is the bean which has been roasted, the same as coffee. It is then broken into a coarse powder, and the husks being removed by a fanning mill, it is ready for sale, to be used in the same manner as coffee. "THE DOCTOR."

Thanksgiving Games.

Thanksgiving is coming! Soon the proclamations of the President and of all the Governors, will be read in all the churches, and printed in all the papers, and there will be cheery family gatherings in many happy homes. Grandparents, children, and grandchildren, will be united around the Thanksgiving board. After the turkey and pies have been enjoyed, followed by the nuts and raisins, the old folks will cluster about the fire, to tell stories, and recall reminiscences of "ye olden time." Then it is that the boys and girls will want some merry sports and games, and we give here a few plays, suitable for a Thanksgiving party.

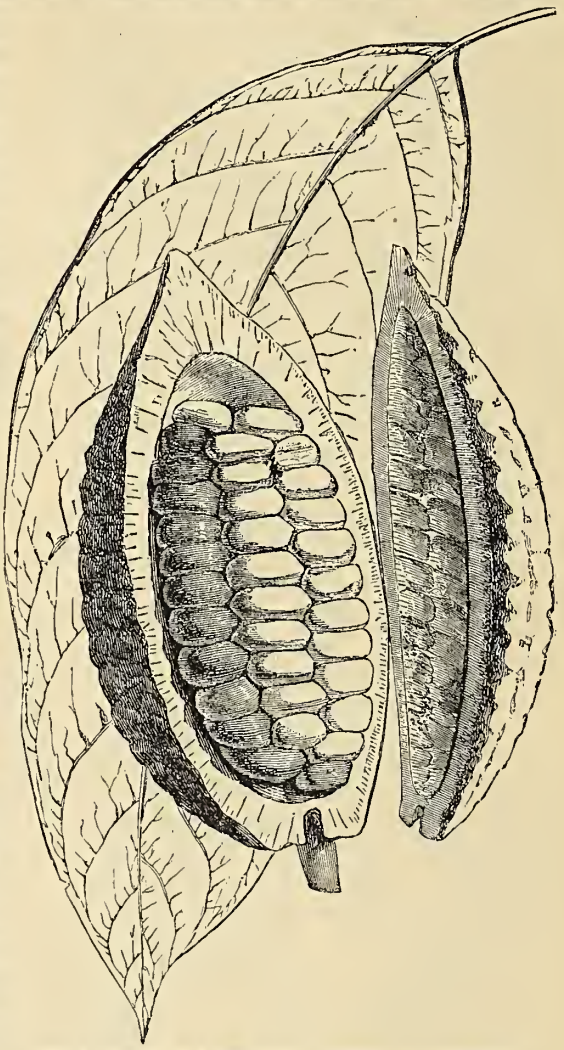


Fig. 2.—FRUIT POD OF COCOA, SHOWING THE SEEDS.

Where the company is large, one of the most amusing games that can be selected, is called

The Silent Gypsey Band.

For this, a head brother, and two door-keepers must be chosen, while the various other brothers and sisters form a circle, standing in perfect silence, neither laughing nor smiling. The leader then whispers to each one, some rediculous act to be performed, such as leading a brother round by the ear, blowing an imaginary feather off of a sister's nose, turning a summersault, or anything the imagination may suggest. He then raps with a cane upon the floor, and points to each member in turn, who must do whatever he has been directed, with perfect gravity, while if any of the company venture to smile, giggle, or speak, he or she is immediately marched out of the room by the watchful door-keepers, and not allowed to return until quite over their merriment. As every one desires to see the others perform, they are generally anxious to come back as soon as possible, but another laugh will send them out again in a hurry. While resting from this merriment,

"Cupid is Coming."

will be found quite entertaining. A letter must be chosen, and the termination "ing:" For instance,

we will suppose D, to have been taken. The first player says to the second, "Cupid is coming."—"How is he coming?" asks the second.—"Dancing," rejoins the first.—The second then says to the third, "Cupid is coming."—"How?"—"Drinking," and so the question and answer go round, through all the words beginning with D, and ending with "ing." Those who cannot answer the question on the spur of the moment, must pay a forfeit. Another capital game that will tax the memory and gravity of the youngsters, is

"One Old Ox Opening Oysters."

The leader commences by saying, "*One old ox opening oysters,*" which each one must repeat in turn, with a sober face. When the first round is finished, the leader begins again: "*Two toads totally tired, trying to trot to Troy,*" and the others repeat in turn, each separately.—"*One old ox opening oysters. Two toads totally tired,*" etc. The third is, "*Three tawny tigers tickling trout,*" which must be added to the first two, and so on to the fourth, and up to the twelfth and last round, each given by the leader successively, and repeated by the other players. They are as follows:—"*Four fat friars fanning a fainting fly. Five fair flirts flying to France for fashions. Six Scotch salmon selling six sacks of sour-kraut. Seven small soldiers successfully shooting snipe. Eight elegant elephants embarking for Europe. Nine nimble noblemen nibbling nonpareils. Ten tipsy tailors teasing a tilmouse. Eleven early earwigs eagerly eating eggs,* and *Twelve twittering tomtits on the top of a tall tottering tree.*"—Any mistake in repeating this legend, or departure from gravity—is punished by a forfeit.

Our Puzzle Box.

GEOGRAPHICAL PUZZLE.

A cluster of islands in the Pacific Ocean went shopping one day: She bought a peak of the Rocky Mountains to wear on her head—a string of islands in the Pacific, for her neck—a cloak of some islands in the northern part of Lake Michigan—shoes made of a country in Africa—and some furs of a cape in Florida. When she came out of the store, a cape on the coast of Virginia asked her to ride home with him. The air was a country in South America, so he wrapped her up in a city of New York—and they rode on through a lake in British America. As they were going along, a river in Illinois peeped out at them from its hole—a country in Europe flew over their heads—a river in Wisconsin howled at them—a big black lake in British America ran after them and growled—and they thought they heard the bay in France roar. They were in a great cape of North Carolina—to add to their terror, the island off the coast of Scotland grew cloudy—and they heard a clap of a bay in Michigan. Soon, however, they came out of the lake in British America—the island off the coast of Scotland became a cape south of Ireland—the mountains of Africa shone—and they reached home, and said a cape south of Greenland, without any other adventure.

RIDDLE.

Five hundred begins it, five hundred ends it,
Five in the middle is seen,
The first of all figures,
The first of all letters,
Take up their station between.
Join these together, a word they will bring,
It will give you the name of an ancient king.

CHARADE.

With sighs in every breeze that murmers,
And peace in every shade that falls,
My first with slowly fading moments,
Brings sweet forgetfulness to all.

My next with final letter doubled,
Gives sweet repose to those who rove,
And shields them from my third, that wildly
Moans o'er the sea and sky above.

The full notes of my whole seem floating
In cadence sweet on every breeze,
And care-worn souls are soothed in slumber,
And wild winds sleep among the trees.

NUMERICAL ENIGMA, 1.

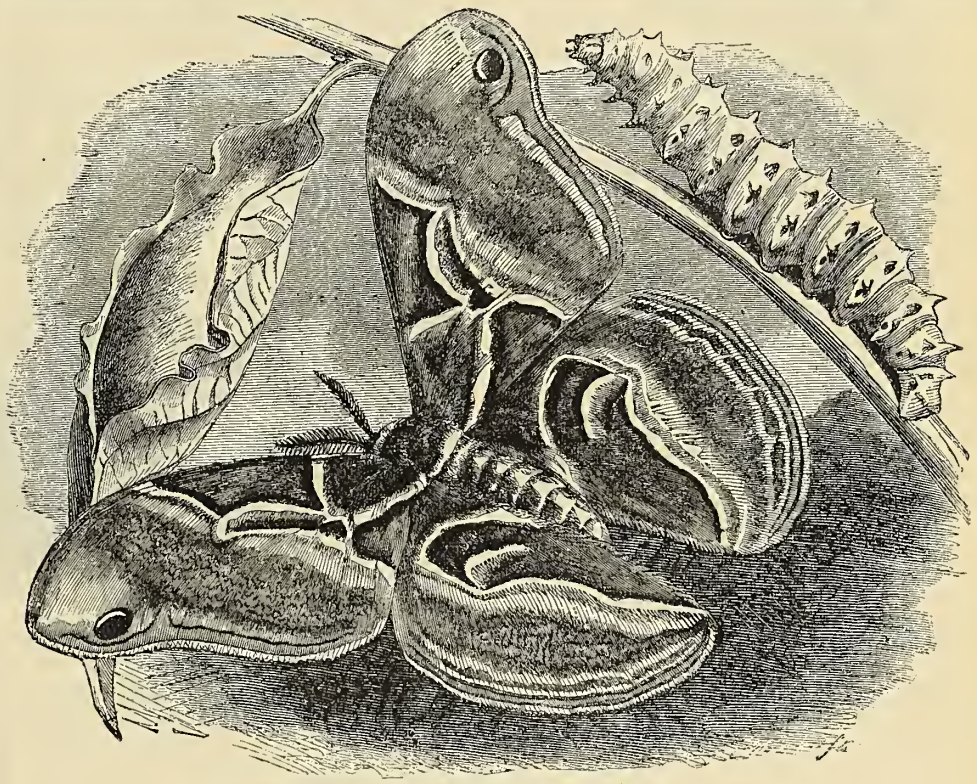
My first is in milk, but not in butter.
My second is in flirt, but not in flutter.
My third's not in mitten, though found in glove.
My fourth's in devotion, but not in love.
My fifth is in hope, but not in despair.
My Sixth is in bruin, but not in bear.
I know the world cries, "O, what's in a name?"
But my whole was surely a poet of fame.

NUMERICAL ENIGMA, 2.

I had just retired to my 5, 6, 3, when my 5, 2, 3, whom we call 3, 4, 8, jumped on my dressing table, and caused my 1, 6, 7, 8, to fall upon the 7, 2, 3. I visited my whole in Rome. AUNT IDA.

A Family of "Silk" Worms.

As soon as the cold of autumn disrobes the trees and shrubs of their foliage, it had been the custom of my family to gather the cocoons of several varieties of moths. One year, in removing the little dry eggs of one of the most beautiful of our moths that had been deposited about, it occurred to me that, by taking care, early caterpillars might be raised. So the following fall I gathered one hundred cocoons. They were placed in a drawer in a cool room, and the last week in May removed from the drawer and arranged in various places. Having then only the limited space of a sitting-room and bedroom, I placed them on mantel shelves and tables, and those that had been gathered on twigs, over pictures and in vases. During the next ten days seventy-five perfect moths appeared. The moths were quiet during the day, but at night they often awakened me by beating against my face.



A MOTH, CATERPILLAR, AND COCOON OF THE "SILK" WORM.

They deposited eggs every where, in masses generally, but here and there two or three were found together. They were about as large as the head of a toilet pin, slightly oblong in shape, and of yellow-white color, tinted with pink. When first deposited, they could be pierced with a needle, but after two or three hours they became hard. A great number of eggs were attached to two wooden knitting-needles, some to a curtain tassel, more to a dried "Sea-fan" (*Gorgonio,*) that ornamented the mantel, and great numbers to parts of furniture, etc.

The "Sea-fan," knitting-needles, and tassel, I placed in a wooden box, and that the eggs might have sun and dew, deposited the whole on a ledge outside my window. On several warm days I sprinkled them with water, and at the end of about twelve days, hundreds of tiny black caterpillars appeared. They were about one-eighth inch long, and wriggled and twisted continually. Wishing to experiment, I had gathered currant, maple, elder and grape-vine leaves. A carpenter had made for me four wooden boxes, about twenty-four inches long, twelve inches wide, and twelve inches deep, with a little door in the back of each. I tacked fine gauze over the tops, placed fresh earth in the bottoms, and covered it in each box with one variety of leaves. I then gathered the little caterpillars very carefully with a turkey feather, and placed about forty in a box. At the end of two weeks they were 1½ inch long, and as large round as a slate pencil. At this stage, the caterpillars had changed in color to a light green. As those that fed upon the elder leaves were larger and more vigorous than the rest, all were fed on these leaves and became large and strong.

Two weeks after placing the caterpillars on the branches, (outside my window,) a severe shower of hail stones fell and the caterpillars curled up into ball shape, and seemed unable to move. They remained in this condition for two hours, and fearing they would die, I made a fire in my sitting-room and brought them in. As soon as they felt the warm atmosphere, they began to creep about and eat as usual. They ate incessantly, and so loud a noise do they make with their horny jaws that they can be heard all over a room. They begin at the margin of a leaf and cut transversly.

On Sept. 1st, I had over 100 full-grown caterpillars, measuring from 3 to 4 inches in length. I sent several specimens to friends by mail, in a perforated tin spice box, with green elder leaves, and they all arrived in good condition, and spun perfect cocoons.

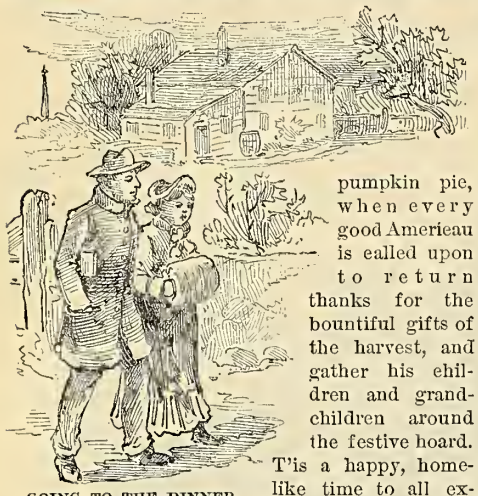
The first week in September, they began to move restlessly about, and I knew they were looking for a place to spin. They wound themselves round and round with a white silken thread, and after a few hours were hidden from view. The outer portion of the casing is made first, so that the after arrangement of the soft inside filling is not to be seen. When the outside of one particular cocoon was finished, I cut a hole in it about the size of a pea with scissors. I was much surprised to see the caterpillar cease his work inside and spin over the aperture until it was completely sealed up. I repeated this operation six times, and six times did it patiently repair the damages. At first the cocoons are pure white and of beautiful silken texture, but after a few days they assume a delicate light-brown color. Those exposed to the weather become very dark-brown, and are rough and stiff, like parchment. Some of the caterpillars spun upon the elder twigs I had placed for them, others in the corners of the boxes, two under a table, one in a slipper, and another in the sleeve of a dress that was hanging in a closet.

Two of the caterpillars strayed from me and spun their cocoons on the branch of a shrub that grew near my window. I left them there for the winter, and took them in in May, brown and weather beaten. The engraving represents one of them, with the moth, soon after emerging. They creep about the outside of the cocoon for a time, with damp, drooping wings, and their beautiful bronze coloring, with the red and white markings, are then seen to the best advantage. AUNT IDA.

How Jamie Spoiled the Thanksgiving Dinner.

AGNES CARR.

The great New England holiday, Thanksgiving, was at hand! that day sacred to roast turkey, and



GOING TO THE DINNER.

pumpkin pie, when every good Americau is ealled upon to return thanks for the bountiful gifts of the harvest, and gather his ehildren and grandchildren around the festive hoard. T'is a happy, homelike time to all except those unfortunate barn-yard families, the chickens, ducks, and turkeys, which at this season are slaughtered hy thousands—a sort of burnt saerifice to the memory of the Pilgrim Fathers.

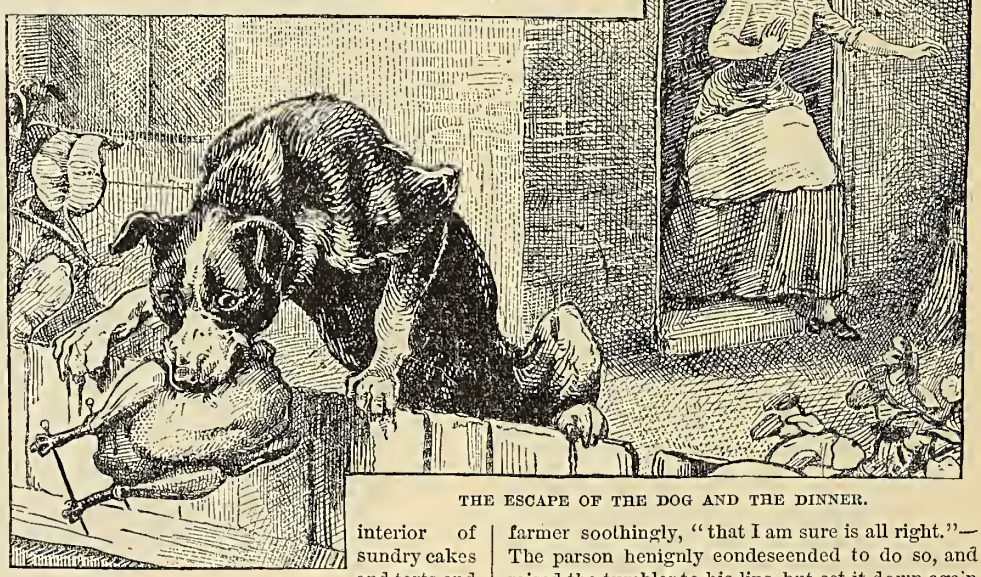
For weeks heforehand, Mrs. Pringle had heen rolling, stirring, and chopping, in preparation for the grand event; for in addition to her own family, she had invited the Parson and his wife to dinner, and the former was as fond of good turkey as his parishioners, and why should he not he? while the latter was celebrated as a house-keeper for miles around. So Mrs. Pringle felt considerable pride in having her Thanksgiving feast as perfect as possible, and awoke on the morning of the last Thursday of November, with the eonvietion that it was to he a day of triumph. She was sure no pantry in the country could display a more tempting array of cakes and pies, and no housewife hoast a larger or plumper turkey than "Mr. Gobhler," who two days hefore had lost his haughty head upon the chopping block.

But alas! she had counted without her host, or rather without Jamie, that ineorrigible small hoy, who always seemed to play the part of Puck in the otherwise well-regulated Pringle household.

JAMIE BEHIND THE FLOUR BARREL.

For months he had watehed the round yellow pumpkins turning more and more golden in the sun, and longed for the time when they should he transformed into pies, and many a time he had been obliged to flee from the wrath of Gobbler, and when safe on the other side of the fenee, had shaken his fist at the blustering fowl, and shouted, "just wait until Thanksgiving old fellow, and I will have my revenge!"

Therefore it was somewhat of a hlow on Thanksgiving morning, when he had taken refuge in the store-room, to eseape heing dragged off to chureh, to be diseovered as the last bell was ringing, hidden hehind the flour barrel, making way with the ehoicest pie of all the lot—the one that was to turn the parson's wife green with envy—and to be informed that, "if he could'nt go to meetin', on Thanksgivin', he eould'nt eat any of the dinner." In vain he pleaded and shouted; his mother gazed upon the ruin of her master-pieee, and remained like adamant. "She shall he sorry!" muttered Jamie, as Mr. and Mrs. Pringle finally departed for the sanetuary, and he set his fertile braiu to work to devise sundry means of torment. Aunt Dolly, the eolored eook, was husy in the kitchen, and had no time to watch "massa Jamie," who improved his opportunity hy emptying the contents of the sugar bowl into the chicken-pie, investigating the interior of sundry cakes and tarts, and finally took a light lunch off of the left wing of the roasted duck.



THE ESCAPE OF THE DOG AND THE DINNER.

Serviee and sermon over, the Pringle family returned, accompanied hy parson Greenleaf and his wife, and it was a sight for hungry souls, to see Mrs. Pringle hustling ahout, scolding Aunt Dolly, and finally marshalling her family and friends to seats at her hospitahle tahle.

The hlessing had been asked, and parson Greenleaf was rubbing his hands with satisfaction, as the door opened to admit Aunt Dolly, bearing aloft a huge trencher, on which reposed the hrown and steaming Gobbler. Mrs. Pringle's face fairly beamed, when suddenly Aunt Dolly tripped on the threshold. Away flew the turkey in one direction, the platter in another, while the poor old woman fell headlong to the floor, not having ohserved the string which naughty Jamie—who was snugly ensconsed under the table, enjoying the fun—had fastened across the door-way, and which was now snapped asunder, and quickly drawn away. With a seream, all started to their feet, while Towser, the watehdog, made a dash from a distant corner, seized the hird, and hefore any one could stop him, was off with his Thanksgiving dinner. Without a turkey, the feast was shorn of half its glory. The discomfitted cook returned mournfully to her kitchen, and farmer Pringle found it hard work to satisfy his hungry guests with chicken-pie, for it proved too sweet to be eaten, while the eranberries had heen too plentifully salted to be palatahle. At length, in despair, Mrs. Greenleaf said she would try a wing of the duck, and finding it tender and good, the parson concluded to take the other. Over went the hird, when to the farmer's dismay, no other wing appeared. "Where is it?" he gasped, while Mrs. Greenleaf shook with suppressed laughter, as she ohserved, "It seems the Pringle fowls are all either maimed or missing," while the hostess longed for the floor to open and hide her confusion. "Those doughnuts look tempting," remarked the parson, helping himself, when suddenly one slipped through his fingers, and went flying into the air, it heing the top eake, to which Jamie had fastened an almost invisible line, and now twitehed quickly away.

"The dinner is hewitched!" exclaimed the parson, rising in indignation, "hut we did not come here to he made fun of!"—"It really is very strange," said Mrs. Pringle, "but I am sure that bad boy of mine is at the bottom of it."—"Take a glass of cider," said the farmer soothingly, "that I am sure is all right."—The parson henignly eondeseended to do so, and raised the tumbler to his lips, but set it down again in a hurry. "Molasses and water! Come, May, we have had enough of this." Tucking his wife's hand under his arm, they departed, leaving Mrs. Pringle in hysterics, while her enraged husband discovered and dragged from beneath the tahle, the author of all this mischief, and invited him to a secret conference in the harn, from whence he emerged very repentant, with swollen eyes, and tear-stained face.

AUNT DOLLY TRIPPED IN THE DOORWAY.

His dreams that night were disturhed hy a vision of "Mr. Gohhler," grown to unwonted proportions, and brandishing a huge horse-whip. The next day Jamie was ohliged to eat humble-pie, and beg the pardon of the good parson and his wife.

A Bit of Greenery in Winter.

However desirable it may be to have flowers in the dwelling in winter, they are not within the circumstances of every one. The house may not be suitable, the hands too busy to allow of even a little care to be given to flowers, or one may live where the plants can only be procured with great difficulty. It is wonderful what a few green leaves will do in enlivening an otherwise cheerless room, and green of some kind is within the reach of almost every one. If living where flower-pots are unknown, then use something else. Old fruit or tomato cans may be covered with some inconspicuous material, and answer well. Convert some kind of a dish into a basket to hang in the window. One of the best baskets we have seen was an antiquated wire ox-muzzle, lined with moss. As to the plants, of course one must rely upon the wild ones. If there is a cranberry bog within reach, a clump of vines filled with fruit, makes a charming object. The little shrub common in such bogs, known as Leather-leaf (*Cassandra,*) will bloom if the stems are kept in water or in wet moss, as well as rooted plants. Another bog-plant, the Side-saddle Flower, or Pitcher-plant (*Sarracenia,*) is very pleasing. A large plant will flourish finely in a bowl of wet moss, or in wet sand. In moist woods the little Partridge-berry, or Twinberry (*Mitchella,*) forms dense mats of green, studded with coral-like berries. A plate or saucer filled with this, makes as bright a table ornament as one need have. Indeed, there are few localities that do not afford some plant which may serve as a bit of green in winter for the eye to rest upon. If the room is kept warm enough at night, a sweet-potato placed part of its length in water, will give a luxuriant vine of richest green. Then there is the large end of a carrot to be converted into a hanging-basket. Scoop out a cavity, and hang the carrot top downwards, keeping the hollow filled with water. If nothing better can be done, place some heads of wheat in water, until the grain sprouts. If no wheat is to be had, a saucer of sand, or one filled with cotton or moss, in either case kept wet, may be sown with grass-seed, or flax-seed, and as the tiny plants appear, the children will find something in their development to daily interest them.

Nervous Exhaustion.

The natural cure for disease from over-work is *rest,* but here a great mistake is sometimes made. When a person is tired out or exhausted by too much physical labor of any kind, we do not say, "You have worked your muscles too exclusively; you should have given more of your vital energy to mental work, and to restore the equilibrium you must immediately take up some mental work. Rest yourself from a hard day's labor at hay-making, or washing, by an hour's work at mathematics." The *very* tired man or woman does not care even to read, but inclines to seek entire rest, perfect laziness, or "balmy sleep," until the strength recuperates. It is quite as unreasonable to urge physical exercise upon a person whose brain is really tired with labor. Let a little rest intervene. The general health is best maintained by a proper intermingling of physical and mental exercise, but perfect health requires some hours of perfect rest in every twenty-four, and some time for simple recreation, or what children call play.

Sometimes what we call "laziness" ought to be allowed. A child (or a man) who grows fat and lazy from over-feeding, should be put upon a plainer diet and urged to exercise. But those who grow languid and have little appetite from nervous exhaustion, ought to be carefully nourished by nutritious food of easy digestion (since the digestive organs are probably in a weak condition), and allowed to rest and gather up strength before being called upon to expend it. No stimulants will afford any real help. They call out the strength temporarily, and make one *feel* strong while the influence lasts, but this is only wasting the strength. One may live for a time upon stimulants, and appear to be helped by them, but only genuine nourishment really builds up the strength. Food alone, however good, cannot cure nervous exhaustion. Pure air, sunlight (all of this that one can get and endure), cleanliness, warm, easy clothing, and restful surroundings, are all essential, and these natural agencies alone will effect a cure in almost every case if taken in time, while the case is curable. The food taken should be real nourishment, not simply the pretty little invalid's dishes, made up of delicate starches and flavorings, that one often sees recommended by ignorance. Starch has nothing for the brain and nerves, and for this reason white bread is very poor food. Flour should be used that contains all of the gluten of the wheat. The "entire wheat flour" is recommended by physicians as the best. Oat-meal, good milk, eggs, beef, and the best fruits and vegetables, all help to build up strength. Pure air night and day are needed, and the time should be spent out of doors as much as possible.

For those who are only beginning to suffer from nervous exhaustion, light gardening and other employment may be useful. Those who are much worn down with brain labor, had better not try anything at first more laborious than riding, as walking wearies an already tired brain. There is no more healthful and enjoyable exercise than light horseback riding; it brings many muscles into play, diverting the mind, and gives tone to both mind and body. "Diet and Quiet" are among the best of our physicians.

Notes from a Southern Home.

My Corner.—Every woman, I suppose, has her "corner" in one of the many different apartments in a house containing a large family. I sit in mine as I write. It does not look as if some fairy wand had lately touched its furniture. It is simply a deep bay-window, with shades all raised, for I do not believe that there can be health where there is not light and a reasonable amount of sun. There is an abundance of flowers in my corner; not rare exotics; indeed some are only wild flowers.

Flower Management.—My flowers need but little care. I use home-made trays to keep from the floor the water which drips through the boxes in which I usually keep them. One of the boys made the frames. To be large enough to catch the drip from half a dozen boxes of flowers, each a foot square, I have a frame 14 by 75 inches, or two frames 14 by 38 inches. I always have the frames a little larger than the boxes over them. These frames, which are an inch deep, are covered with stout oil-cloth, and when finished, are like an oil-cloth waiter. Set a frame on the floor, and place the stand for the flowers, etc., on it. Boxes are more durable, and, if neatly made, even prettier than the earthenware we buy. I have to destroy grubs, etc., in the soil of my flower-boxes. I slake a piece of lime, and then add an abundance of water. After standing a day or so, pour off the clear water and use it upon the earth infested, but do not sprinkle the plants themselves.

Feather Flowers.—Just now is the season for Grosbeaks. The boys, on their return from gunning, have brought me the birds, and I picked them myself, as the delicate gray of the feathers struck my fancy. I selected all I wanted, being careful not to let them get damp. Now I have half completed a wreath, about a foot in length. To make a flower, of course the number of feathers depends on the size and kind of flower desired. In making a flower with a single row of petals, I arrange the feathers between my thumb and finger until they suit my ideas—until they form a perfect flower; then I run a piece of wire about two inches long up through the quills of the feathers, that appear below the fingers, then wrap the stems—the wire being in the center—just while I hold them. Green or brown silk will answer, but silk the color of the feathers is more tasteful. In gray, the darkest shade is used as leaves, and a pretty contrast is made when the lightest is employed for the petals.

Children's Under-Garments.—I think there would be less indigestion and restlessness among growing children, if they were supplied with proper clothing and food. Over-careful parents persist in housing their children, building them up on stimulants, etc., treating them generally like hot-house plants, when really all they require is the ordinary care you would give any other growing animal. Of course it will be understood that I am speaking from a physical point entirely. Children, to be healthy, *must* have fresh air and all the exercise they can get, properly cooked food, with little or no *grease* used in preparation, especially in this southern climate. Cotton-seed oil is a good—in that it is more wholesome—substitute for lard and other animal fats. Exercise both develops children's muscles, and hardens them, and prevents that unhealthful flabbiness so often met with. A child should wear nothing in the least tight or heavy around the waist. To prevent this, and still not burden the child with an unnecessary amount of clothing, I have made this week sets of (I suppose we may call them) supporters. They are made with straps short enough to allow the weight of the garments to be borne by the shoulders only.

Children's Drink.—I find that in such weather as we have in the South, the quantity of water children would drink to quench their thirst would be very unwholesome, so I keep lemons prepared in this way: roll well a half dozen lemons at a time, slice thinly with a very sharp knife, so that no juice is extracted in cutting. Put a layer of slices half-inch thick in a wide-mouthed jar (stone-china keeps coolest), then sprinkle liberally with sugar. In this way go on until the jar is filled. If ice is handy, place a piece in the mouth of the jar, and set it in a cool place. A piece or two and a spoonful of juice is all that is needed in a glass of water. Sometimes the children take a glass of milk before going to bed. Southern Home.

Keep Out the Cold Air.

It is much better to have the ventilation of our dwellings under control than to have a constant inpouring of air, no matter how cold it may be. The windows, especially in houses built as cheaply as possible, let in all around (and particularly where the two sashes meet,) an astonishing amount of air, so much that in severe weather it is almost impossible to make the room comfortably warm. By checking this inflow of cold air from without, the same amount of fuel that before failed to make the room warm enough, will be so much more effective that considerably less coal or wood will be burned. "Weather strips" of various kinds have been invented to be used around windows and doors for the purpose to which we have referred. The essential part of these is a narrow strip of rather stiff India-rubber fabric, attached to a strip of wood or metal, which may be fastened to the window in such a manner that the rubber will cover the cracks between the sashes and the frames, and elsewhere. Those strips are very useful, but are not to be had in all places; besides, while not very costly, they involve an outlay which many would gladly avoid. Before the rubber strips were introduced, woollen ones were in common use. The material known as "list" or "listing," the marginal strips being woven on broadcloth and other goods, is convenient, and costs little or nothing. This material is not obtainable everywhere, nor is it the best substitute for the window strips. By pasting strips of paper around the sashes the current of air can be kept out quite as completely as by any other method. Brown paper will answer as well as any, and if the job be neatly done, it will not be unsightly. When no longer needed, the paper may be pulled off after it has been wetted with warm water. One sash in each room should be left for necessary ventilation, and some movable strip, such as lath, covered with cloth, provided to close its cracks if necessary. A strip of board or plank, covered with some fabric, to be used to close the crack at the bottom of each door, will be found very useful.

Keeping Forest-Tree Seeds.

It is pleasant to note that each autumn brings an increasing number of inquiries as to the preservation of the seeds of forest trees, as it indicates a growing interest in tree planting. The seeds of our native trees are not likely to be injured by cold. Heat, on the other hand, and consequent dryness, soon destroys their vitality, and after a few days exposure to a dry atmosphere they could not be made to germinate. When a nut or other seed drops in the woods, it falls upon dead foliage by which it is soon covered, and it remains in a bed of damp leaves throughout the winter. In preserving seeds we have only to imitate as closely as may be the natural method. Where the quantity is not large, the seeds may be mixed with an equal bulk of sand, and kept cool. It is better for those with hard shells to be exposed to the alternations of freezing and thawing, hence the box or keg containing them may be completely exposed to the weather. Where large quantities of walnuts, hickory-nuts, chestnuts, or other large seeds are to be kept, a less troublesome and expensive method is followed. The nuts are placed in heaps of five or six bushels and then completely covered with turf. The sods should be neatly matched and no opening left. If these sods are not readily procured, the heaps may be first covered with wild hay, straw, or with leaves, and then a few inches of earth is to be put on and neatly finished in order to shed rain. Some seeds, the various Thorns for example, can not be made to germinate the first year, but the plants will come up freely in the spring of the following year. Instead of sowing such seeds and allowing the ground to lie idle, or what is worse, grow a crop of weeds, the end may be readily accomplished by what is called "stratification." This consists in making alternate strata of seeds and earth, thus forming a square heap with steep sides. The seeds are left in the heap until the time for sowing in the second spring, when they are sifted out and sown at once. In our climate, such a heap might become too dry and thus spoil the seeds; a better method is to mix soil and seeds in a box or other receptacle, and bury the whole in a convenient place. Small quantities of seed may be treated in the same manner, by using a flower-pot.

Flower Vases for Winter.—The most economical disposal of a few cut flowers in winter, is to distribute them thinly through some basis of green, and thus make each flower, even the smallest, look at its best in its green setting. Last month we gave a method of doing this in a vase prepared with fresh moss (*sphagnum*) and ivy. A correspondent of "Gardening Illustrated" (England), gives another, which he is so far from English as to call a 'wrinkle.' A handful of wheat-ears (we should say heads of wheat), cut at the proper length, are put in water to soak a few days; these are then arranged in the vase, with water, which is to be changed twice a week, and placed in a cool room. The whole becomes, by the germination of the wheat, a mass of fine green, and remains so all winter; if the growth becomes lanky, trim with scissors. As one gets a few flowers, they may be arranged in the green, and without flowers it is a pleasing object in winter, and one of those inexpensive household decorations that can be very readily adopted in the families of most farmers.

Camp Life in Florida.

Our artist here presents us some original illustrations of out-door life in Florida during November. If any of our readers are troubled with bronchial complaints or with weak lungs, we advise them to go there for the winter months, in preference to staying in the cold climate of the North. The expenses to and fro are not large. You can find board at moderate rates all through the State. But better still, you can erect your own Cabin, or your own Tent, and live very cheaply, shooting your game, which is plentiful, and liberally supply your table. You will want to take a few cooking utensils, and other things pertaining to camp life. We know of families who have gone to Florida for the cold weather, and spent the entire winter months camping out at a less cost than their house rent would be at home.

WINTER CAMP LIFE IN FLORIDA.

Drawn and Engraved for the American Agriculturist.

Saving the Corn Husks.

The epithet "not worth shucks" probably came into use before shucks or husks of corn had a market value. In some of the southern cities are establishments which purchase immense quantities and convert them into material for upholsterers, who use it for filling mattresses, and in whole or in part for stuffing chairs, lounges, etc. There are a number of domestic uses to which they may be put, and a stock of them should be secured before they have been injured by exposure to the weather. We have seen beds made on the farm vastly better than any husk-bed that can be purchased. The husks were slit into strips about half an inch wide by drawing them over points or blades fixed in a block. Husks split in this manner make excellent cushions for farm wagons. Their use to braid into horse collars, and into door mats is well known in some localities. Door mats are made of two kinds; in one the braid is made smooth in the ordinary manner and sewed with very strong thread, making both sides alike. In the other a doubled husk is woven into the braid, leaving the ends projecting upon one side. When a braid of this kind is sewed, the projecting husks form a mat like a coarse brush. The ends of the doubled husks are to be clipped off evenly. This forms a most serviceable mat. A mud-mat for the back-door is made of a board or plank of convenient size, nailing cleats at the ends to prevent splitting, and boring numerous inch holes in it. A tight roll of coarse husks is placed in each hole and made fast by driving a wooden peg into the center of each. The ends of the husks are then clipped and the mat is finished. Those who are fond of making useful and fancy articles will find the inner husks a beautiful and easily worked material. These should be selected as soon as the corn is husked and assorted according to their thickness; those found next to the ear are very soft and delicate and should be kept for the finest work. When wanted for braiding they can be made pliable by dampening, and used whole or split, according to the size of braid. Those who are skilled in braiding can make various kinds, but the novice must begin with the common three-strand braid, taking care as one husk is nearly used up to slip under another so that the braiding may be continuous. Such braid may be made up into beautiful and serviceable table mats, baskets of various kinds, slippers, etc. No doubt the finer husks could be made into a braid suitable for excellent summer hats.

Harvesting the Roots.—Beets and mangels are protected from the light early frosts by their broad leaves; but as soon as the leaves droop, and the plants have finished their growth, the roots should be dug. It is often a great saving of labor to loosen the roots with a subsoil plow, running it close to one side of the row. It is objectionable to store large quantities of roots in the house cellar, as the foul gases rise, making the air unhealthful. They may be stored in pits, in a dry place. First throw up the roots in heaps, and cover with straw and a layer of boards. Earth is thrown upon the boards with the exception of the extreme top, which is left for ventilation. Enough earth should be used to make the interior of the pit frost proof. But unless the heaps are on high, dry ground, it is important to cut pretty deep trenches around them, with outlets to carry off any excess of water that may be in the soil.

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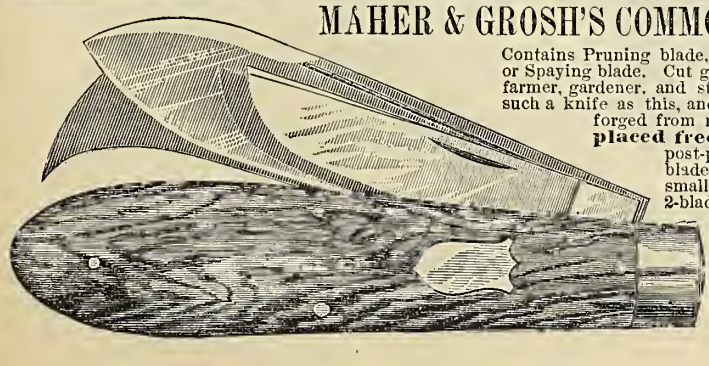

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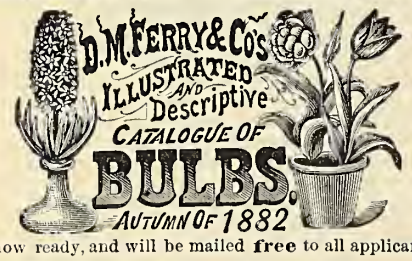

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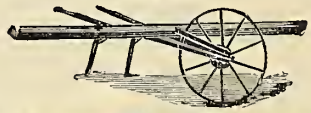

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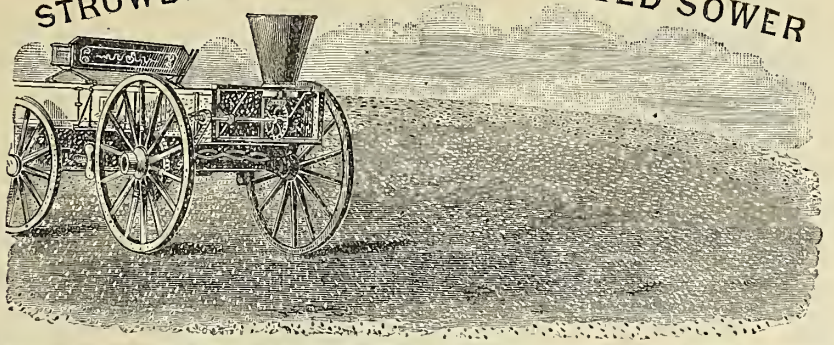

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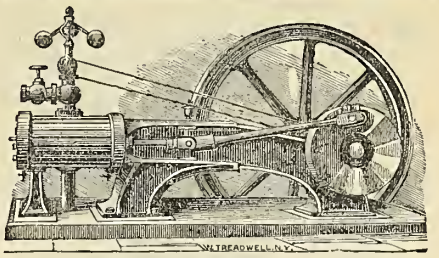

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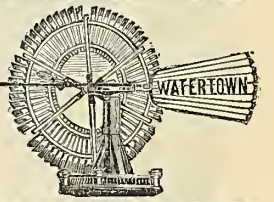

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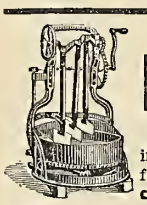

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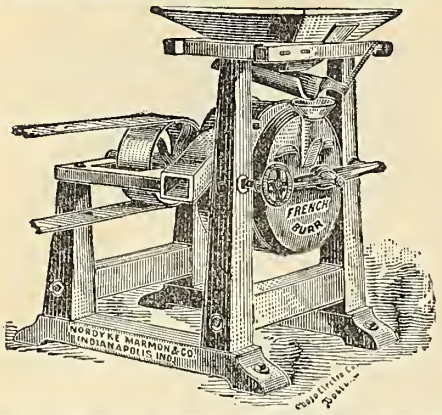

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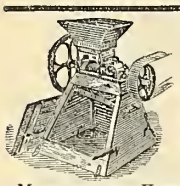

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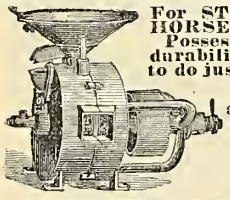

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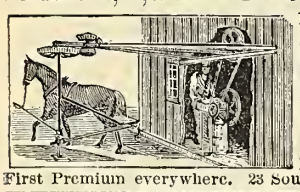

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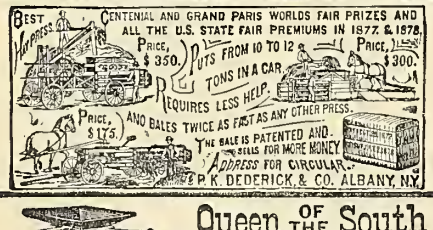

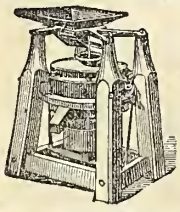

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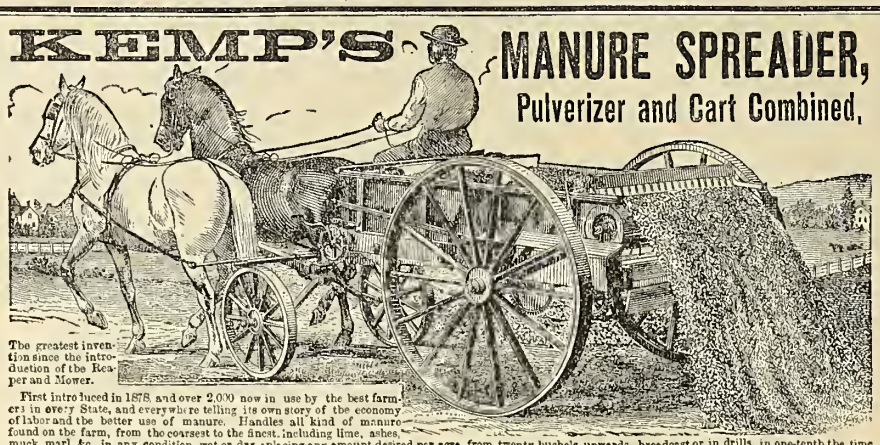

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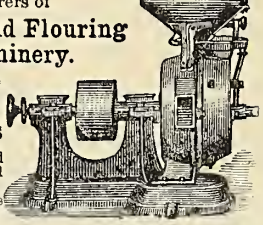

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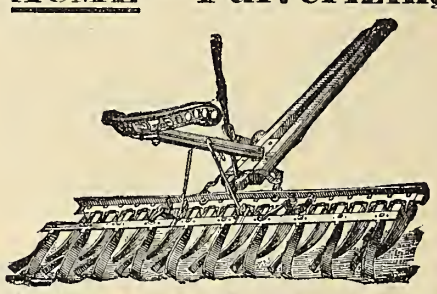

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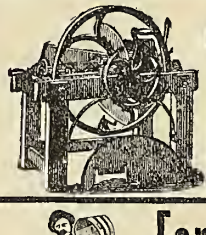

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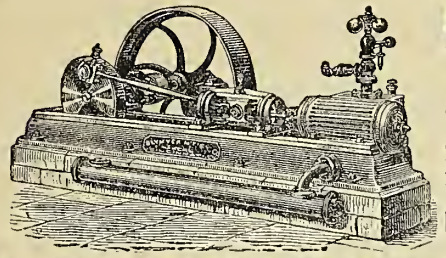

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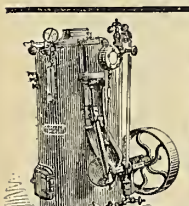

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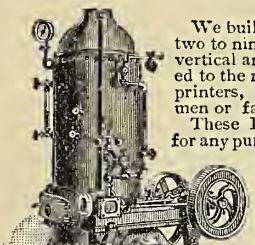

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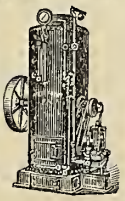

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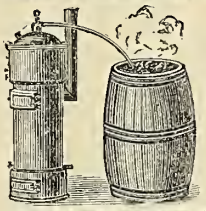

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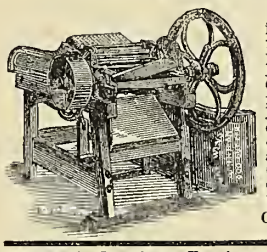

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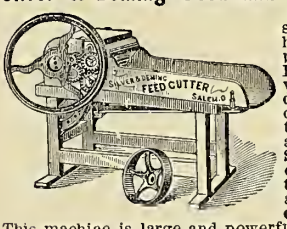

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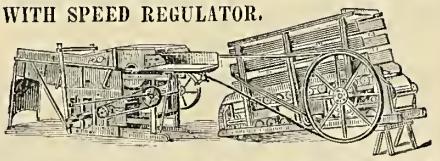

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Meal and Oyster Shells
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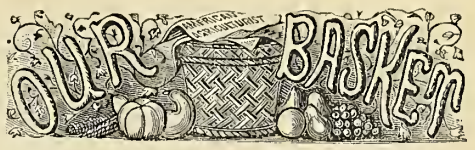

containing a great variety of Items, including many good Hints and Suggestions which we throw into smaller type and condensed form, for want of space elsewhere.

In justice to the majority of our subscribers, who have been readers for many years, articles and illustrations are seldom repeated, as those who desire information on a particular subject can cheaply obtain one or more of the back numbers containing what is wanted.

Back numbers of the "American Agriculturist," containing desired articles, or those referred to in the "Basket" or elsewhere, can usually be sent post-paid for 15 cts. each, or $1.50 per volume.

Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

What is Cow Grass? asks "T. G.," Bergen Co., N. J., who has seen it mentioned in English journals.—"Cow Grass" is a name for a clover but little known in this country, the "Zig-Zag Clover" (*Trifolium medium,*) sparingly naturalized in some of the older States. It differs from Red Clover in the shape of the leaves, darker purple flowers, and in the zig-zag bending of the stems. Neither of these differences is very constant, and some botanists think it is only a form of red clover. The English farmers pay much more attention to the varieties of clover, and their peculiarities, than we do. They have at least six distinct varieties of red clover, differing in size, in the duration of the root, and in color of the flowers. Cow Grass Clover is for some purposes preferred by the English, as it is two weeks or more later than any form of red clover.

An International Horticultural and Botanical Congress.—In 1883, the Imperial Horticultural Society of Russia will celebrate the 25th anniversary of its organization, by a special Exhibition and Congress, to be held at St Petersburg, from the 17th to the 28th of May. An invitation is thus early extended to horticulturists of all nations to exhibit, and to societies to send delegations. Particulars may be learned from Dr. Regel, Director of the Imperial Botanic Garden. American horticulture has not been adequately represented at any of the former International gatherings, and we hope that the same may not be said of the coming Congress. We have much to learn from others, and not a little to teach them in horticulture.

Treatment of Weeds.—In riding along our country roads, I have often noticed long beds of garlic, docks, and other weeds spread in the road-bed. The weeds had been pulled from a field near at hand, and then dropped when off the owner's premises. When a heavy rain falls, the seeds are deposited on a neighboring field, and in a year or so, some farmer has a very undesirable crop, and one with which he will have no little trouble. I know of a field that was once little better than a bed of docks from the above cause. The proper way it seems to me, is to destroy these plants before they can possibly ripen, or if they have been neglected, burn them, and kill the seeds. E. G. P.

Sunflower Seeds for Fowls.—"G. E. R.," Essex Co., Mass. Your fowls will not refuse even the seeds of the large Russian Sunflower, after they get acquainted with them. Crush a few of the grains at first, and they will soon take kindly to whole ones, though they are three-quarters of an inch long.

A Kettle Holder.—I have felt for a long time like casting in my "mite" to help some, if possible, to an easier way of doing hard labor. There is nothing more trying to a person's patience and temper, than to have a kettle of boiling soap, or other substance upset. We made a good support from an old wagon-tire. Measure the size of the kettle as high up as it is desired to have the tire, cut the tire to fit, and weld the ends firmly together. The remainder of the tire is used for the three legs, which are fastened to the band. With this holder, the kettle may be set where most convenient, and it does away with pole or prop, and there is no danger of burning a wooden fork, and letting the soap into the fire. It will hold the kettle firmly, and the contents may be stirred as much as desired. Mrs. A. M. S.

The Grain Gamblers Still at Work.

Until quite recently, a general bope and expectation prevailed that the large crops of 1882 would prove too heavy a load for the gambling speculators in breadstuffs. But unfortunately for the interests of the whole country, such is not the present outlook. Take, for example, the condition of the Chicago wheat market at the end of September. During a few closing days prices were gradually worked up, and on the 30th, when September options terminated, wheat sold at $1.08 per bushel for delivery on tbat day, while it was offered at 93 cents and 94 cents for delivery the next day and onward.

How did this occur? For a long time previous a class of speculators known as "shorts" or "bears," believing that tbe improved crops must lower prices, had made large sales of "September wbeat," that is wheat to be delivered wben called for during September, at prices considerably below $1 per bushel in Chicago. The purchasers, known as "bulls" or "longs," took these options and quietly bought up nearly all the wheat in store and on the way. The "bears," when called upon to deliver, found little grain available except as purchased from the "bulls," and the latter run the rates up as high as they dared to do, and called in their contracts. Of course the sellers had to pay the difference between the contract prices and the market rates as controlled and fixed by the buyers. Reckouing the amount of wheat thus contracted to aggregate 10,000,000 bushels, a low estimate, and the artificial difference to average 10 cents per bushel, the "bulls" received a clean million dollars profit. And this is to go on. Already extensive contracts are made and are daily making for future months, counting as far ahead as February, and even to May, and embracing an aggregate many times larger than the entire surplus that will be for sale. As we write, the Chicago quotations come by telegraph thus :—

October Wheat....... 94$\frac{1}{8}$c	October Corn.. . .....68$\frac{1}{4}$c
November Wheat......94$\frac{3}{4}$c	November Corn.......60c
Year Wheat.. ... .93$\frac{7}{8}$c	Year Corn........... ..54$\frac{3}{4}$c
October Oats...........31$\frac{3}{4}$c	

By "year wheat" and corn is meant that the sellers can deliver their sales, or call for margins at any time during the rest of this year. The above quotations show the belief of the bears that there will be times before the close of the year when prices will range enougb below 93$\frac{7}{8}$c. for wbeat, and 54$\frac{3}{4}$c. for corn, to enable them to realize a good profit, while the buyers calculate on the manipulation of accessible supplies, and manufacturing reports, so as to keep prices above these figures until December 31st is passed.

Bad Effects of the Wheat Speculation of 1881-2.

Very great harm has been done to this country by the gambling speculators in the grain crop of 1881, and the evil effects are likely to continue during many future years. We were fast coming to be the constant and chief feeder of Great Britain, and, at frequent intervals, of other parts of Western Europe. England, with her limited home territory, and her teeming manufacturing population, never produces anywhere near as much breadstuffs as her people consume, notwithstanding the fact that by thorough tillage, bigb cultivation, and tbe use of abundant fertilizers, her wheat crop averages 28 to 29 bushels per acre, or more than double the average yield of this country. The great improvements in transportation facilities from our grain regions to and across tbe Atlantic, enables us to successfully compete with the producers of Southeastern Europe, and other more distant points formerly largely relied upon. This would doubtless have continued had prices been governed by tbe relative supply and demand.

But taking advantage of the short crops of 1881, a class of speculators here bought and controlled our surplus, and put up prices so high that English dealers could not take our wheat. They therefore began canvassing every other available source. The high rates enabled foreign dealers to gather many million busbels in India, and to not only glean large quantities from localities hitherto considered inaccessible, but also to make drafts upon the "reserves" usually stored there against temporary drouths, or occasional short crops from other causes. These supplies were brought from remote points, not only in India, but in Australia, and elsewbere, and laid down in Great Britain at lower rates than they could be taken from the grasp of the speculators who held our American exportable stocks, even when ocean freights amounted to only a very few cents per bushel.

The result is, that all these foreign lands have been stimulated to very greatly enlarge tbeir wheat production, and with cheaper labor to offset the longer carriage, they will hereafter supply a very large percentage of the breadstuffs which would otherwise be taken from this country. So our wheat growers can not indulge any reasonable hope of realizing high prices hereafter, except now and tben, in years likely to be far apart, wheu there may be a cbance general failure of crops throughout all the rest of the world. It would have been an immense gain to our farmers in the long run, if they had subscribed ten, tweuty, or fifty million dollars, presented the sum to the speculators, and sent them into retirement. But the evil has been done and there is no help for it. It will be worth while for the next legislatures of tbe various States to try to devise some laws that will effectually squelch all gambling in breadstuffs carried on by dealing in "margins."

The Oyster-shell Louse on a Willow.

"C. H. B." sends us from Southport, Conn., a twig of Kilmarnock Willow, more completely covered witb the Oyster-shell Bark-louse than any apple twig we ever saw. We have in former numbers figured this scale-louse, which might have been more appropriately named "Mussel-shell," as its scales are more like mussel-shells, than those of the oyster. These scales, at the present season, cover only eggs and the remains of the female louse. Next spring, when growth begins, these eggs will hatch, and the minute and active lice will make their way to the young shoots, anchor themselves by the beak, and soou form a scale-like covering similar to that of the parent. They can only be attacked in the lively state during a few days, and at this time they are so small that they escape notice. Sometime ago we published an account from one who found a pear tree infested by these scales. Painters were at work upon his house at the time, and in a sort of desperate freak, be took a brush and painted the tree, as he said, "from stem to stern." Next spring, to his surprise, it came out all right and flourished. We have also given an account by one who, having some young apple trees badly infested by these shell-lice, painted tbem over with crude petroleum and perfectly restored tbe trees. A tree so completely covered as this specimen would indicate, can not live—indeed our correspondent says that one of her kilmarnocks has died already. We should try crude petroleum. By this we mean tbe natural oil as it flows from the wells, aud by no means any of those liquids called petroleum oils, which are dangerous compounds. The application to the tree may cure, but it may kill, but the result will be the same, as tbe insect is likely to destroy the tree, if unmolested.

American Apples in England.—The first important sale of American Apples took place in Liverpool, on September 21st, when 1,648 barrels were sold. The prices ranged from 16s. to 27s. 6d. per barrel. The Messrs. Hougbton & Co. inform us that the demand is likely to continue, and fair prices to be maintained, so long as the arrivals are moderate. In former years, when the fruit brought a little more than the price at home (transportation added), every kind of trash was sbipped, without regard to variety or condition, and the market glutted with unsalable fruit. At the date referred to the arrivals had been 3,086 barrels against 16,236 to the same date in 1880, a year which apparently taught shippers caution. This season the apples from the States have arrived in better order than those from Canada, which is the reverse of former years. The two varieties which brought tbe highest prices were "Red Pippins" and "Ramshorns," which sold for 3s. to 5s. per barrel more tban Baldwins and Greenings. It would appear that varieties are labelled to suit the market, as neither of these is an accepted name among our fruit authorities. "Red Pippins" is a synonym for four different varieties, including "Ben Davis," wbicb is most likely to be tbe one sent abroad. "Ramshorn" was the name of a fruit so poor that it went out of use long ago. It is difficult to conjecture to what variety it is now given, but it must be some good and well-known one, as it sold for $1 or more bigher than apples regarded here as among the best.

Look to the Labels.

When trees are taken up in the nursery the labels are hurriedly wired on, and usually very tightly so that they may not be lost. These tags are only to allow the purchaser to identify tbe trees until he has planted them, and are not intended to be permanent. If such labels are left as they were attached, at the first increase in the diameter of tbe branch a strangulation will take place, and if the wire is a strong one, the bark will be completely cut througb to the great injury of the tree. We have shown that in an orchard no labels are really needed; if a proper record is made the variety may be known by its position. But many like to know about a tree at once, and prefer to have a label for ready reference, even if they have a record besides, and on scattered trees or those grafted witb more than one variety, a label is convenient. It is best to avoid wooden tags altogether, at least if put on with wires. No matter how loose the wires may be, some of them will become imbedded in the bark before it is noticed. Very cheap, durable and safe labels may be made of sheet zinc or thin sbeet-tin. Cut the metal in the shape of a long wedge, from a quarter to half an inch wide at one end, running to a point at the other, and from 6 to 10 inches long. Write the name near the large end, upon zinc with a common lead-pencil, or upon tin with an awl or other sharp point, scratching through the thin coating of tin to the iron beneath. These may be attached by coiling the small end loosely around a small twig. Another way of attacbing the zinc strip is to punch a small hole midway of its length, and having it placed over a twig like a loop, pass the small end through the hole and secure it by a twist. If trees were planted last spring or this autumn with the nursery labels still attached, no time should be lost in removing tbem and either replacing them by otbers, or trust solely to the record.

More About Spiced Pickles.—A Canadian correspondent writes us tbat the recipe we gave in Sept. last, "does not appear to be very spicy," bence one is sent "kuown to be used by many families." It is as follows: Bruised Ginger, Ground Mustard, Salt, of each 4 oz.; Turmeric (ground) 1½ oz.; Black Pepper (ground) 1 oz.; Cayenne ½ oz.; Mustard Seed (whole) 2 oz.; Vinegar, one gallon; mix the spices witb a little of the vinegar, then put all together in a stone pot and allow it to stand for a few days, stirring occasionally. "All that is necessary to do with the vegetables to be pickled, is to wipe them and put them into the pot from time to time as gathered. Tbe pickles will be ready for use in about six or eight months." He adds: "The only drawback is, that the pickles can not be used for some months, but those wbo use it, make up their supply accordingly." So much for our Canada friend, and in return for his recipe we suggest that be make his vegetables ready, place those used whole in brine, let those used sliced or chopped be sprinkled with salt, and leave them for a few days; omit tbe salt from the spiced viuegar, and baving drained the vegetables let them be placed in a jar, and the heated, spiced vinegar poured over them; they will be ready for use in six or eight days, instead of as many months.

Literature of the Rose.

The Rose is one of the few flowers that has a literature of its own, not only in English, but in the languages of Continental Europe. It is curious to observe the difference between the works of the English writers and those of this country. The English works seem to be written almost solely to teach the raising of roses to take the prizes at Rose shows. In this country we care but little about shows and prizes, and our authors very properly teach their readers how to raise Roses, that achievment being sufficient in itself. Notwithstanding the fact that our climate is most unfavorable for Rose culture as compared with that of Europe, we have accomplished much. A distinct class of Roses traces its origin to this country, and there have always been amateurs who devoted themselves to the culture of this flower, in spite of the unfavorable climate. In its commercial aspect, there is probably no country which excels ours, whether in plants of choice varieties at low rates, or in producing flowers and buds under glass. We have a Rose literature which, if not extensive, is suited to the climate and has had its influence in promoting the cultivation of this favorite flower.

The earliest works devoted exclusively to the Rose, of which we have any knowledge are: "The Manual of Roses," by W. R. Prince, and "The Rose Manual," by Robert Buist, both of whom were pioneers in American horticulture. "Their deeds live after them," but their works would be very difficult to find. More than thirty years ago, there was published "Parsons on the Rose," by Mr. S. B. Parsons, Flushing, N. Y. This work was at once accepted as a standard, a position it has since maintained. Though Rose-culture, so far as varieties are concerned, has greatly progressed since the first edition appeared, it has in its subsequent editions kept pace with it. Following Mr. Parsons' work there came "The Book of Roses," by Francis Parkman (1866), and "The Rose," by H. B. Ellwanger (1882), each being upon a different plan, and each having its merits. Since the last edition of the standard work of Parsons was published, Rose-culture has made great progress, especially in the production of choice varieties, and the work has now been brought up to the present day. The new edition includes all the novelties worthy of cultivation, while it retains those characteristics which has made it a favorite work for the Rose-grower. Orange Judd Company, New York. Price $1.50.

Guenon on Milch Cows.—A Treatise on the Bovine Species in General. Translated from the last and enlarged edition of Guenon, by Thos. J. Hand. New York: Orange Judd Co. Price $1.00.

More than 30 years have passed since "Guenon's system" was published, and those who recollect its first appearance are aware of the interest it aroused. The few Agricultural journals of the time described the "system," and there was much discussion and not a little ridicule. The original work was translated, and one or more other works were written to illustrate "Guenon's system." In the course of 30 years, a "system," if it had no real foundation of fact, would be entirely forgotten. This was not the case with Guenon's. During all these years there has been a regular, if not large sale of the translation of the original work, showing that if the system were not generally adopted, there were many persons who wished to inform themselves as to its merits. And so far as this country is concerned, there are probably more farmers and cattle breeders who make use of Guenon's marks in judging of animals, than there were when his method had the attractiveness of novelty. A generation of readers of Agricultural journals has grown up since the matter was discussed, and finding that "Guenon's Discovery" was new to the majority of these, we gave, last month, a popular account of it, which need not be repeated here. Whether one wishes to adopt Guenon's system, or to show that it has no value, it is proper that he should know just what it is, as proposed by the author himself, and that he should study it as modified by Guenon after many years of practice. The translation under notice is from the last work issued by the author before his death, and published many years after the first edition, from which the only English translations had been made. This, of course, embodies Guenon's very latest views, and such changes in and additions to the early treatise as his experience taught him were needed. Having had frequent occasion to compare this translation with the original, we can testify to its fidelity, and, so far as the language allows, literal exactness. The many illustrations being reproduced by photography, the volume is the most complete presentation of Guenon's treatise to be found in the language.

Christmas Decorations.

Nothing enlivens the general effect of the Christmas greens more pleasingly than a few bright berries. Flowers are often employed, but berries are more appropriate to the season. If we wait until we wish to use them we are apt to find that the birds have anticipated us or severe weather has injured them; it is altogether safer to gather them at once. The Holly is about the only tree that gives us both evergreen leaves and showy berries (save the still rarer Yew), but is found in only a few places. Large quantities are brought to eastern cities just before the holidays, the branches with berries selling at a high price. The vine known as Wax-work and Climbing Bitter-sweet (*Celastrus scandens*), has bright orange pods which open and show a scarlet berry within. This is very showy and useful for decorative purposes in early winter. The related "Burning Bush" or "Waahoo" (*Euonymus*) has pods of similar structure, but dark pink without. The Black Alder (*Ilex verticillata*) has most brilliant scarlet berries.

The Cornels or Dogwoods in their several species have clusters of small berries from nearly white to blue and black. The heps, or fruit of the Wild Roses may be turned to good account. Though not showy, the bluish berries of the Red Cedar may sometimes be worked in with pleasing effect. But our object is not so much to point out all the kinds as to suggest that they be gathered in season. The berries must be kept cool and where they will not shrink; a fruit cellar is perhaps the best place.

The Crops and Prices.

With two very strong parties, having millions of dollars at stake, the one party interested in a rise in prices, and the other in a decline, it is not strange that the most conflicting reports as to the state of the crops are daily, and almost hourly, sent throughout the country. Until the corn crop was safe, every fall of a few degrees in temperature, was heralded far and wide as the approach of a "killing frost." A thermometer variation of 5° to 10° was made effective in sending the price of corn up or down.

Fortunately no severe general frost has come to nip the maturing corn, and this crop is now safely ripened in all the principal corn-producing regions. It is hardly time yet to obtain full accurate statistics as to the aggregate yield. To-day the reports are that the yield per acre is not turning out well. Yesterday we were told by telegraph, in effect, that "corn is now safe, and the crop will turn out far better than the most sanguine had hoped for."—The best information that we can gather, indicates that our estimates given last month were not far out of the way. The wheat crop was mainly gathered and threshed with no disastrous storms to spoil a large per centage, and the corn was able to do its best up to the hardening of the kernels. The acreage and yield has been below the average in some leading corn States, but has been far above the average in others. On the whole, taking the entire country together, there has been a fair crop. While high prices can not be looked for, especially as there is no scarcity of food in Europe, the rates will be kept up to medium, by the fact that the country is stripped of almost the last bushel of old corn, so that a large amount will be absorbed by the usual reserve requirements. And further, except when pinching pecuniary necessity requires immediate sales, farmers will not sell when prices rule very far below what they have been recently receiving per bushel.

The general feeling is, that at this date (Oct. 6,) prices of wheat, corn, etc., have settled down to about their normal level, and that changes in the future will be mainly affected by the rising and falling tide of gambling speculations. So many heavy operators, both as bulls and bears, are now, and will continue to be, engaged in efforts to elevate and depress prices, by "deals," "corners," etc., and so large a multitude of outsiders will cluster around each of the opposing parties, that future rates will be as unsettled as the waves of the sea, but the rise and fall will not be large, except in some temporary outbursts, occurring most frequently about the close of each month.

Farmers can not be governed by these changes, and about the only safe rule for them, is to *sell when they are ready to go to market.* They will be just as likely to lose as to gain, if they attempt to be governed by the course of speculation.

P. S.—An official telegram from Columbus, Ohio, Oct. 6, puts the Ohio Wheat Crop at 45,787,811 bushels, almost exactly the same as the Census crop of 1879, when it was 46,014,869; the corn crop this year, 87,005,280 against 111,877,124 bushels in 1879; oats this year 18,435,779 against 28,664,505 bu. in 1879; barley, 1,337,301 *vs.* 1,707,129 in 1879.

"Hog Products"—Prices.

There is a continued speculation in the articles grouped under the general name "hog products," that is, Pork, Bacon, Hams and Lard. At present the supply is small, and a very few wealthy speculators are able to buy and hold all there is in market, and that comes in, and put prices up to any figures they choose. As the result, Pork is selling wholesale to-day (Oct. 5) at $23 per barrel in Chicago, and at about the same in New York, for delivery in October, and $21.65 for delivery in November. Lard is 12¼ cents per pound in Chicago, and about half a cent higher in New York. For delivery in later months, December to May, the rates are only about one cent per pound lower. There will of course be little pork fattened from the new corn crop before about the close of the year. In ordinary years, with so good a corn crop as is now certain, we would look for a decided fall in the prices of hog products after sufficient time to feed the new crop. But it is to be remembered that owing to the poor corn crop of last year, and the high price of pork during all this year so far, the last hog that could be decently prepared for slaughter has been sent to market throughout all the great Western hog-producing States; and the trouble now will be that there will be a comparatively very small number to fatten. Last spring the *American Agriculturist* forewarned its readers of this prospect, and earnestly advised the saving of and production of all the pigs possible. As it is, though there is likely to be, later on, some decline in pork, bacon, and lard, the probability is that pretty high rates will be maintained during all the winter months if not well into spring and summer. What the actual supply and demand may not do in this direction, will be accomplished by speculators. So we now say to farmers, give good attention to the swine; increase the weight of those ready to fatten, as much as possible, and care for the pigs and multiply them.

Matches—Pick up the Ends.

Parlor Matches, so called, are now in very general use, as they are without brimstone, and light with great readiness. This ease of ignition is a source of danger, and calls for great care. Matches of this or any other kind should never be scattered or allowed to lie about loose. Each room where these are used should have some kind of a "match safe." Very excellent ones of cast iron are sold

in the furnishing stores. There should be some place where matches are to be kept, and they should be left no where else. As parlor matches are now much cheaper than formerly, they are often carelessly made. Poor, cross-grained wood is frequently used, and when the match is struck with force, it breaks, and the end with the fulminate upon it, drops to the floor or often flies among paper or clothing. Whenever this happens, make it a point to always search for and find that end, and either burn it or put it where it can do no mischief. When such a match-end is stepped on, it explodes with a startling report. In some cases the clothing of women and children has been set on fire by this means. We have known of persons being greatly alarmed by such an explosion under foot. A parlor match is a great convenience, but when carelessly kept and used is only less dangerous in the house than a loaded pistol. The Fire Insurance Companies find that a very large percentage of losses by fire is due to friction matches.

RENEW NOW.

Do not wait until the end of the year, but renew your subscription as soon as you get this paper, and would not some of your friends like to come with you ?

Cost of Moving Farm Products from the West to the East.

All classes, producers and consumers, and especially Eastern farmers, are interested in the cost of transporting grain, flour, meats, and other farm products from the agricultural realms of the West to the thickly populated, consuming regions on the Atlantic coast. If, for example, a bushel of wheat can be carried from the fertile fields of Dakota to New York or Boston, for 25 cents, the Eastern farmer has that much advantage over his far Western competitor; and so of other products of the farm. Taking Chicago as the great Western Center for collecting breadstuffs and meats, and New York as the chief Eastern Center for receiving and distributing or exporting, we give below the present established rates of transportation by railroad between these points, which are nearly 1,000 miles apart. From places west of Chicago, not near two or more competing railroad lines, the rates are a little higher for proportional distances.

Railroad Freights, Chicago to New York.
Per 100 lbs.

Wheat, Corn, Rye, Barley and Oats..	25 cts.	Live Hogs.....	30 cts.
Flour, per barrel....	60 "	Dressed Hogs.....	64 "
Wheat, per bushel..	15 "	Lumber, Shingles, Laths.....	30 "
Corn, per bushel...	14 "	Wool	85 "
Oats, per bushel....	8 "	Bailed Hay.....	25 "
Pork, Beef, Lard....	30 "	Salt.....	30 "
Horses, Mules, Sheep	60 "	Tobacco.....	31¼ "
Beef Cattle.....	40 "	Apples, Pears, etc..	60 "

These prices are based on full car load lots. Freight cars carry about 24,000 lbs., or 12 tons of grain. Taking the rates above as the basis, *add* 5 cents per 100 lbs. for freight from Chicago to Boston, and 4 cents per 100 lbs. from St. Louis to New York. *Deduct* from Indianapolis to New York, 2 cents per 100 lbs.; from Cincinnati, 4½ cents; from Detroit or Toledo, 6 cents; from Mansfield, O., 6¼ cents; from Cleveland, O., 7½ cents; and from Dunkirk or Buffalo, 10 cents per 100 lbs. From Chicago to Philadelphia, 2 cents, and to Baltimore, 3 cents per 100 lbs. less than to New York.

What is Farm Gardening?

A correspondent who has noticed an occasional mention in the *American Agriculturist*, of "farm-gardening," asks us to explain how it differs from ordinary farming, or from market gardening. The farm-garden is devoted to those crops which can only be raised by high manuring, and thorough cultivation—Cabbages, Cauliflowers, Melons and Celery, and similar crops, which, though perishable, may be transported to some distance. They are raised not to be consumed by animals, but to be sold for consumption elsewhere. Ordinary farming raises the staple crops, wheat, corn, hay, etc., and these are often turned into flesh, wool, dairy products, etc. The proper market-garden is devoted to perishable crops, or those that are only at their best when fresh, hence are near cities or villages, where transportation to the place of consumption occupies but a short time. Farm-gardening is extended market-gardening, or the highest kind of farming. It is such farming as must sooner or later be adopted in all the older and thickly settled parts of the country, where the land is high, and must raise crops that will pay better than corn and the like. The sooner farmers in these localities cease to compete with the West in raising grain, and devote their land to crops which meet a ready sale near home, the less we shall hear of the complaint, "farming don't pay."

A Special Offer.

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We are enabled by **a very advantageous** arrangement with a large Manufacturing Jewelry Firm to offer to our readers one of the **Best Watch Chain Magic Pencils,** as shown in the Engraving. It is of the finest gold plate, and the barrel is of imported imitation **onyx.** It has the patent magic movement that is so very popular and desirable in a pencil. The engravings show length and size, closed and open. It is suitable for a lady or gentleman, and very convenient to carry in the pocket, as well as on the chain. In fact it is one of the most complete Pencils of its kind, and something that

EVERYBODY WANTS.

We have only been able to secure a limited quantity of these beautiful Pencils, and while they last, we will send one of them, post-paid, to any present subscriber, who will collect and forward **ONE** new subscription to the *American Agriculturist*, English or German, at $1.50; OR we will supply it for the price, which is $1.50.

THE

Amerikanischer Agriculturist 1883.

The German *Amerikanisher Agriculturist* has been published for twenty-four years, and stands to-day in the **front rank of German Agricultural publications,** being recognized in all quarters as **authority in agricultural matters,** and **far superior to anything** of the kind published in the world. The benefit of the immense outlay for editorial work, contributions and the multitude of expensive illustrations which is required in the preparation of the American edition, is received by the *Amerikanischer Agriculturist.*

AN ENTIRELY SEPARATE JOURNAL.

While the *Amerikanischer Agriculturist* has the benefit of all of the enterprise and energy and expenditures of the English *American Agriculturist*, as above stated, it is hereafter to be an entirely separate Journal from the former, presenting only such matter as is specially adapted for the Germans, and containiug departments expressly conducted for the German people in the United States. We have made arrangements, and are still making further arrangements, to have the ablest German writers. With one exception, the *Amerikanischer Agriculturist* is the only purely German agricultural paper published in the United States.

No pains or expense will be spared in making this journal an absolute necessity to all German cultivators or laborers on the farm or in the garden, who desire to do their work intelligently and in the best modes.

NEW MANAGEMENT.

Among others who from this time forward will devote their entire time to the *Amerikanischer Agriculturist* is Prof. C. H. PLUGGE, educated at the famous Universities of Bonn, Leipsic and Brussels. Twelve years ago Prof. PLUGGE came to this country. For six years he was connected, as a professor, with leading educational institutions; for six years he has been the official translator of the United States Government, in the Bureau of Education, Department of the Interior, and has had charge of all foreign works, libraries, correspondence, etc. In his official capacity he has become thoroughly familiar with the wants and needs of the German gardeners and farmers in the United States. He knows where every German settlement is located, and what are the special requirements of these settlements. He brings to the work earnestness and enthusiasm.

VALUABLE TO ALL.

The farmer, gardener, and fruit grower will always find in the *Amerikanischer Agriculturist* most valuable information. Not only the fathers and sons, but the mothers and daughters, and even the little ones, all will be supplied with much to interest and aid them in every number of this journal. Many Americans who have Germans in their employ, take the *Amerikanischer Agriculturist* for their use, and find they make better *gardeners and workmen*, from the reading of it.

Above all others, perhaps, the newly arrived German should have this Journal if he desires to engage in farming or gardening, and would do so intelligently. We ask our readers, many of whom are in the vicinity of *German settlements* to make known its value. They can rest assured that the *Amerikanischer Agriculturist* for 1883, will be far in advance of any previous year in beautiful illustrations and interesting and profitable reading for the whole family.

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Notwithstanding the **great improvements made,** and to be made in the *Amerikanischer Agriculturist*, we shall continue to furnish it at the same price as heretofore—$1.50 a year, single numbers at 15 cents.

We will forward a specimen copy to any German in the United States, who desires to see the paper with a view to subscribing. Special inducements will be given to persons who desire to canvass for subscriptions.

Catalogues Received.

According to our custom, we here give the list of autumnal catalogues. Those of our friends who send orders, will oblige us by stating that they saw the announcement of the dealer in the *American Agriculturist*. The list will be continued in the December number.

NURSERYMEN.

Including those who make a specialty of Small Fruits.

H. S. ANDERSON, Union Springs, N. Y. Small Fruits, Pot-grown Strawberries.

JESSE BATTY, Toms River, N. J. The Manchester Strawberry.

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ELLWANGER & BARRY, Rochester. N. Y. A general Catalogue of Fruit, and Ornamental Trees, etc., and one of Small Fruits, especially Strawberries.

GREEN'S NURSERIES, Rochester, N. Y. An instructive catalogue, with several novelties.

G. H. & J. H. HALE, South Glastonbury, Conn. Strawberry list. A colored plate of Manchester.

W. F. HEIKES, Huntsville, Ala. Trade list of general Fruit Stock.

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T. S. HUBBARD, Fredonia, N. Y. Grape-vines, the "Prentiss," a speciality.

M. W. JOHNSON, Snowflake, Mich. Price-list of Forest-tree Seedlings, and "Forest Leaves," a useful treatise on their propagation and culture,

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KELSEY & Co., St. Joseph, Mo. Wholesale list of general stock.

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F. K. PHŒNIX, Delavan, Wis. We are glad to see that our old friend offers a general stock in his own way.

J. A. ROBERTS, Malvern, Pa., offers a condensed list for autumn planting.

E. P. ROE, Cornwall-on-the-Hudson, N. Y. Illustrated catalogue of Small Fruits.

SAM'L H. RUMPH, Marshallville, Ga. A large collection of Orchard and Small Fruits.

B. L RYDER & SONS, Chambersburg, Pa. Strawberry Catalogue, with specialities.

JOHN SAUL, Washington, D. C. Special Tree catalogue, Fruit, Evergreen, and Ornamental.

SEEDSMEN AND FLORISTS.

The catalogues of seedsmen at this season are mainly devoted to Bulbs. As all here enumerated offer large assortments of Dutch and other Bulbs, it is not necessary to state it for each.

B. K. BLISS & SONS, No. 34 Barclay St., New York City. As neat and full as usual.

HENRY A. DREER, 714 Chestnut St., Philadelphia, Pa. As usual, crowded with all seasonable articles.

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HOVEY & Co., No. 16 South Market St., Boston, Mass. Very full, with many rarities.

PARKER & GANNETT, No. 49 N. Market St., Boston. Neat, full, and handsomely illustrated. Also Plants.

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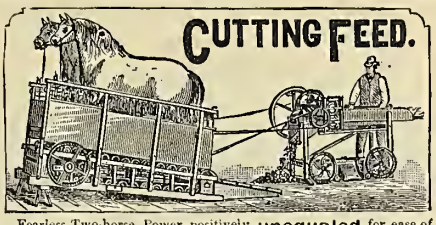

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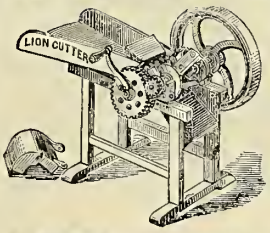

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GUENON ON MILCH COWS.

A Treatise on the Bovine Species in General.

Translated from the Last and Enlarged Edition of Guenon.

By THOS. J. HAND,
Secretary American Jersey Cattle Club.
With over 100 Illustrations.

This translation is from the last work issued by the author before his death, and, of course, embodies Guenon's very latest views, and such changes in and additions to the early treatise as his experience taught him were needed. Having had frequent occasion to compare this translation with the original, we can testify to its fidelity, and, so far as the language allows, literal exactness. The many illustrations being reproduced by photography, the volume is the most complete presentation of Guenon's treatise to be found in the language.

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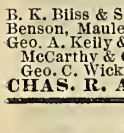

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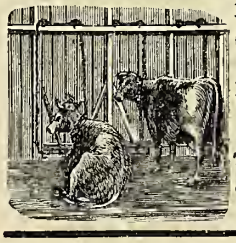

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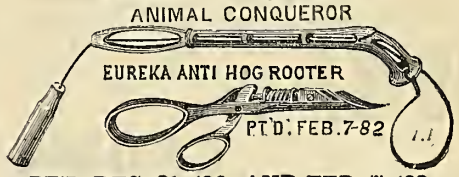

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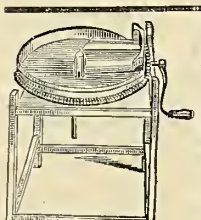

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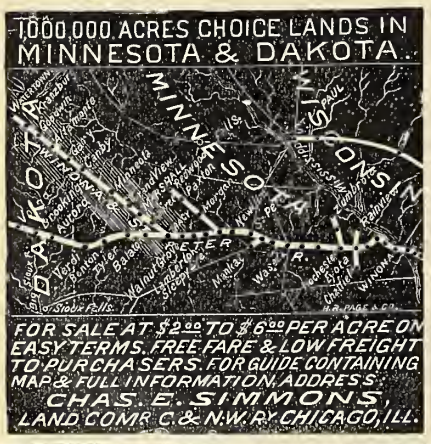

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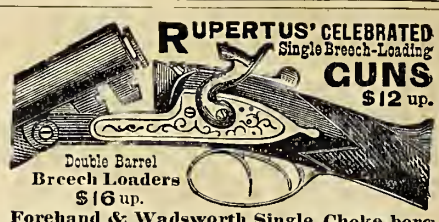

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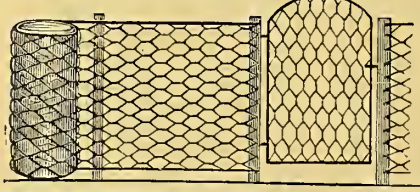

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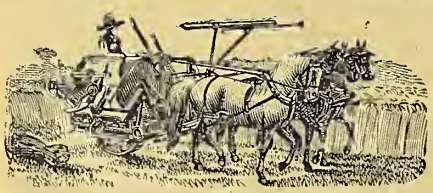

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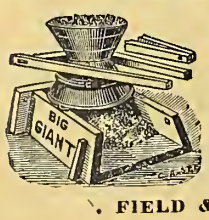

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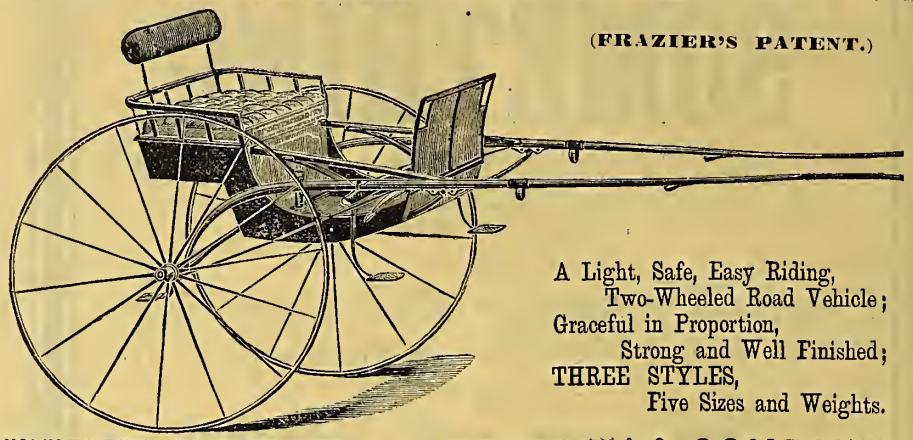

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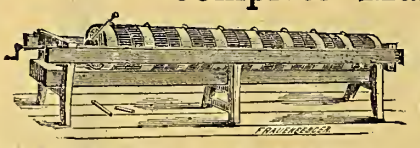

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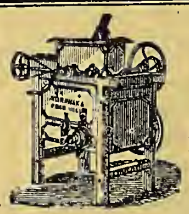

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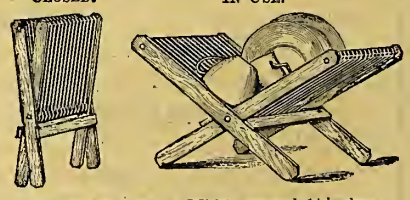

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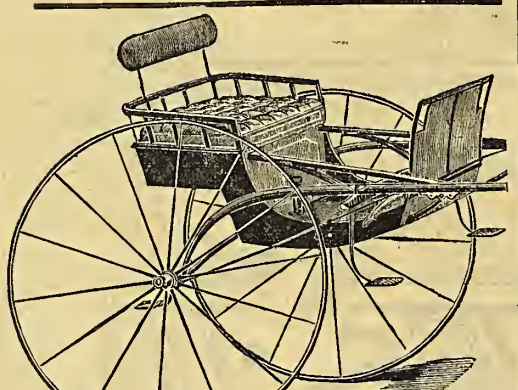

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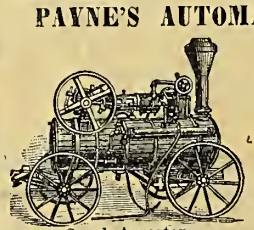

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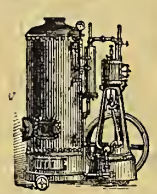

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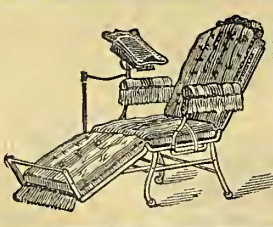

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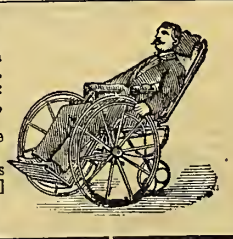

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WINTER.

Designed and Engraved for the American Agriculturist.

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"He is truly great that is great in charity."—THOMAS À KEMPIS.

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AMERICAN AGRICULTURIST.

NEW YORK, DECEMBER, 1882.

The American Agriculturist for 1883.

During 1883 the *American Agriculturist* will be far superior in every respect to any previous year of its long existence. The very radical improvements made in the October and November numbers afford the readers some idea as to what the paper is to be in the future. New Cover, New Type, New Paper, New Artists, and Additional Editorial Writers are making the *American Agriculturist* a marvel in journalism. How so much original matter can be furnished for so small a subscription price may well excite the curiosity of other publishers. We shall continue, however, to keep the price of the paper at the old rate of $1.50 per year, post-paid.

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BEGIN NOW.

Preserve the Index.

Our readers will notice the Index sheet, with its beautifully illustrated first page, accompanying this number, and they will of course preserve it, as it will be useful in referring to any article which has appeared in the volume closing with this issue.

Contributions from leading members of the Charcoal Club of this City form a striking pictorial feature of this number of the *American Agriculturist.* A careful examination of their pleasing and instructive engravings will reveal that strength, originality, and skill, which explains the rapid growth into popularity of this Society of Artists.

See page 562 for full description of the magnificent Plate Picture, "IN THE MEADOW," given to every subscriber to the *American Agriculturist.* The eminent Artist Church alludes to this plate picture in the highest terms, in a private letter to a friend, a portion of which we are permitted to reproduce elsewhere.

Whatever the order in which they are printed, all the articles in the *American Agriculturist* are fresh and seasonable, as for example, Mr. Joseph Harris' paper in the last pages of this number.

See page 564 for blank form to use in sending subscriptions, new ones as well as renewals. You need not mutilate the paper, but can make a new form of your own, with the one printed as a model.

Suggestions for the Season.

The Close of the Year.

December is the first month of winter and the last of the year. It is a most fitting time for taking an "account of stock." Storekeepers and business men know the importance of this work. The goods are overhauled and an exact list of all the articles, with their value, is made out; and from this, with the expenditures, the balance for the year is obtained. The farmer should do the same thing with his farm property, that he may also know how much he has made or lost during the year. The task is not a great one, as the sheep, horses, implements, grain, etc., can be catalogued rapidly, and when it is done there is a feeling of satisfaction that more than pays for the trouble. It may be somewhat difficult to estimate accurately some of the items, as for example the amount of labor expended upon a crop still upon the ground. A system of farm accounts kept from week to week will aid greatly in all such cases.

Farm Management.

No fixed rules can be laid down for the management of farms. The soil of one township may be best fitted for growing some kind of grain, while the adjoining ones can be most profitably devoted to live stock. No two farms situated side by side are exactly alike. The distance from market, the demand for special products, and, not the least, the individual taste of the farmer, have all much weight in determining the system of farm management that it is best to adopt. Those who have given the most thought to this subject, are the slowest to advise any general system to be applied to every farm. It is like a garment that is intended to fit all persons, and suits none. Every year of progress made in agricultural knowledge teaches more forcibly than previous ones, the truth that the farmer must rely largely upon his own intelligence and judgment in working out the best system for his own farm. Even in so seemingly a trifling a matter as the pruning of a grapevine, the wisest vineyardist can only give general rules, and each grape grower must adapt them to the peculiarities of each vine.

Secure the Ice Crop.

When there is good solid ice six inches thick the work of filling the ice house should not be delayed. There are so many risks to run in waiting for thicker ice, that it is much better to gather the crop at the very first opportunity. If snow comes while the ice is being formed, it should be removed while it is fresh; this may be done with a snow-push or a short and a heavy stable broom; and on a large scale with a snow plow and scraper. Icemen who harvest many thousand tons, have a complete outfit of labor-saving tools for their work. The farmer, with only a small house, holding 25 to 30 tons, needs a common cross-cut saw with one handle removed. A splitting bar may be made of a large chisel with a long handle. A pike for handling the ice cakes while they are in the water, is very convenient, and can be made by any blacksmith at a trifling expense. Ice-tongs are not essential; but are so handy and cheap, that it usually pays to be provided with them. The ice to be cut is first lined by using a hatchet or axe along a straight-edge board; after sawing, the strips are cut into squares by first making a deep groove, and afterwards using the splitting chisel. Ice is heavy and difficult to handle, and advantage should be taken of the ease with which it slides over smooth surfaces. Loading the sled or wagon from the pond or river, is usually the hardest labor of the ice harvest. This can be made comparatively easy in many places, by drawing the ice blocks up an inclined shute made of planks with narrow edges of boards. A number of blocks of ice being placed in a line at the submerged end of the shute, a spike is forced into the rear one, and with the team attached to the spike, the whole row is slid up into the box of the sled or wagon.

Winter Care of Live-Stock.

There are a few general rules for the care of live stock in winter, which are of universal application:

First.—They should lie dry, whether bedded or not. A dry floor is far better than wet bedding. Spar or slat floors, through which urine will quickly pass, and which give the animals a level standing place, are especially to be advised. A good degree of comfort may be had on such floors, but a full supply of dry litter—straw, leaves, swamp hay, etc.—certainly makes all kinds of stock more comfortable.

Second.—Shelter saves fodder, wherever lumber can be easily obtained, to a degree which few practical men are aware of. The warmer the stables are, the better, except perhaps for sheep. But with close, warm stables, it is essential that the manure heap should be where it will not contaminate the air, and that there should be perfect ventilation, so arranged as not to cause drafts of air.

Third.—As to feed. This should be given with the utmost regularity and uniformity—never more than will be all eaten up long before the next feeding time. Then the animals have an appetite for their food, so that coarse fodder may be first given, to be followed with better, and by grain in some form, if this be a part of the daily ration. This is no doubt the most economical system, securing the least waste and best digestion of all kinds of fodder used in the ordinary way.

Fourth.—Grooming and care of the animals are a most valuable means of keeping them in health as well as of saving feed. The skin of an animal existing in a state of nature is washed by every shower, brushed and carded by every bush, licked by its mates, rubbed by the ground in rolling, and in various ways kept free from accumulations of its own exfoliations, from the stoppage of its pores by sweat, and from its own inherent dirt. A healthy skin means warmth, health, life, and vigor, other things being about right, and we can secure this in horses and cattle only by grooming. A straw brush, made by twisting up a thick rope

of straw until it becomes very hard and inclined to kink, then doubling it and twisting it into a stiff mass a foot to 18 inches long perhaps, with the ends tucked and fastened, will do a deal of rubbing before it goes to pieces, and is for purposes of friction, rubbing off mud, etc., better than any other brush. Clean skins are just as important for cows as for horses, and the use of the brush is recommended in the cattle stalls.

Fifth.—Sunshine. Fresh air and sunshine are health-giving and invigorating principles and not one of our living dependents should be without them. In the thorough ventilation recommended, good air has been provided for, nevertheless all well fed animals enjoy and are the better for air breathed out of doors even on our coldest days, and a sun-bath of an hour or two is of the highest value. Stables should be constructed with reference to sunlight, and long narrow wings for stables, both for horses and cattle, have in this particular a great advantage over basement stables under the whole barn, as the former may have windows for the admission of sunlight and air throughout their entire length.

Sixth.—Give all animals free access to salt. With plenty of feed, horses and sheep will stand any degree of dry cold incident to the climate of the United States and Canada. Neat cattle need more protection, and it is really cruel to expose them unprotected to winter weather. Swine need thoroughly warm dry quarters in winter, and will hardly survive exposure such as other domestic animals will bear perfectly well. So with poultry—while turkeys will bear the severest storms and cold roosting in the most exposed positions, fowls seek shelters either of thick evergreens, or houses, and ducks and geese the protection of the manure pile or the hay stack. In sheltering all animals and poultry, which we do from motives of economy, it is well to bear in mind their natural instincts, that those which need it most are best protected.

Shut Out the Cold.

The temperature of the living animal body cannot vary greatly, and therefore when the weather grows colder there is an increased demand for food to be consumed in keeping up the natural heat. A low temperature is an expensive condition, as every farmer who has wintered his stock well knows. There are two general methods of overcoming the wearing or exhausting effects of severe cold weather; giving the animals an abundance of rich and palatable, heat-forming food, and securing them from exposure in warm and comfortable stables. A happy combination of these two methods is the one to be provided by every stock raiser who looks both to the comfort of his animals and their profitableness.

If stables generally could be warmed with safety by stoves, there is no doubt that a saving in the amount of fodder would result. Much can be done in this direction by keeping the animals in well-built stables, and free from all chilling currents of frost-laden air. The writer has in mind a stable, where a long row of milch cows suffered, almost to the point of freezing, on many winter nights, because the stable was full of large cracks, and the doors only partly shut out the drifting snows. A few hours of patching the walls, flooring, and doors, with very little expense for lumber, would have made its good effects evident within a single week at the dairy-room. A cow is not at her best when she must shiver with the cold and have her rough coat covered with the frost and snow of a severe winter night. Looked at in simply the pecuniary light, this method of keeping farm stock does not bring the best returns. There is no farmer who, being able to own a herd of cattle or a flock of sheep, can afford not to house them well. He may let them eat at will from the stack of the best hay that is made, but if they have no more shelter than the stack affords, he may come to the conclusion common to all bad agricultural practice, that farming does not pay. Let this be a word in season for all those who may profit by it. Stop the cracks in the stables, and save pain for your animals and money for yourself. Take special care not to have the farm stock exposed to the chilling winter blasts; in short, shut out the cold.

Differences in Crops.

The order of succession in a rotation of crops, depends upon a number of important differences in the nature of the crops grown. Some kinds of plants require more of one food than another. Thus mangles need several times more nitrogen than clover, and clover requires over twice the quantity that the wheat plant demands. Some crops are called exhaustive of potash, because they make large drafts upon the soil for this element of plant food, and some take up relatively much phosphoric acid. It is therefore important that the crops be so arranged, that the demands for the then leading food elements, be distributed, as much as possible, throughout the whole series. The amount of any of these substances required to produce a crop, does not fully determine its exhaustive nature, as a large portion of each plant composing it may be left on the field, to be of benefit to the succeeding crops. This is the case with clover, which, though taking much nitrogen in its growth, leaves a good part of it in the surface soil, to feed other plants. Some crops are known as ameliorating, and are put into the rotation largely for their effect upon others. A corn crop, though in itself profitable, offers a good opportunity to bring the soil into a better condition for the production of other grains. The expense of tillage, the killing of the weeds, etc., should not be all charged against the corn crop, but spread over the whole series in the rotation. Roots help to clean the land, and indirectly are of much value as a regular crop in a well-planned rotation.

Cleaning up Fence Rows.

Many of the fence rows in the older parts of the country are in a dreadful condition, and are seed-beds for weeds for all the land that they enclose. The writer remembers very well a farm that "came into the family" twenty years ago, and with it some of the foulest fence rows that could be found. The first thing done was to clean these broad strips of briars, young saplings, stumps, stones, and the remains of what was once a rail fence. The work was not an easy one, but with the aid of a yoke of oxen, and burning heaps at frequent intervals, the rubbish was cleared away, and what before was an almost impassable barrier of wild growth and accumulations, became a strip

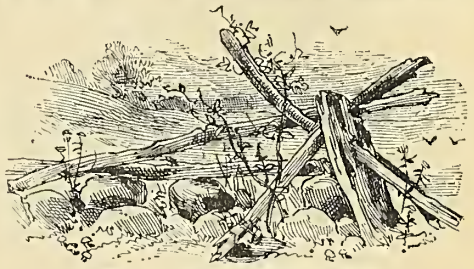


Fig. 1.—AN OLD FENCE ROW.

of the richest and most productive land on the farm. In some cases the fences were not replaced, and the lines of the old ones were plainly visible for years in the heavy growth of grain and grass. In some places these "wild hedges" had so far encroached upon the fields, that they were more than a rod wide, and the loss of acreage was therefore considerable upon the whole farm. There is no objection to an occasional tree along the line of the fence, and vines, like the Virginia Creeper,

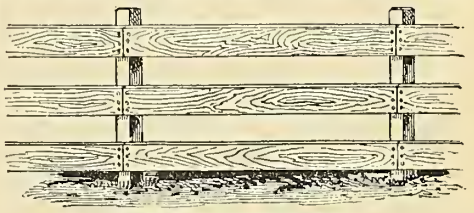


Fig. 2.—A GOOD FENCE.

climbing upon a fence, especially if of stone, adds to the beauty of the farm. But there are positive objections to letting the division lines of the farm become propagation beds for briars and weeds, and the receptacles for stumps and stones. Clean out all unsightly rubbish fences, as they cumber the ground to the exclusion of better things. The fence rows should be as neat and clean as the middle of the field, and if they are not so, this is a good time of year to put them in a proper condition.

Plows and Plowing.

Good plowing depends both on the implement and the plowman. A good plowman cannot do good work without a fair sort of a plow, and the best plow, in the hands of an unskillful laborer, will not do satisfactory plowing. Plowing a moderately stiff sod, with a growth of grass several inches high upon it, is a good test of both plow and plowman (especially if trees, rocks, or other obstructions occur). Plowing is generally judged by the straightness and evenness of the furrows, and if the furrow slice as turned over is smooth throughout its length, people are all the better pleased. This ought not to be the test of the quality of the work.

In plowing *flat*, the kind of plowing usually done in this country, a good plow ought to turn a furrow to which it is adapted so that the floor of the furrow shall be flat and the land side moderately cut under, while the furrow-slice is laid well away from the furrow, unbroken, but *crumbly*, the grass side perfectly covered, and laid as nearly as possible *flat* in the bottom of the furrow. This is called "flat-furrow" plowing, and is the kind of work adapted to spring and summer culture, because the sward thus laid flat is less likely to grow and trouble the crop. The same plow may be used for lap-furrow plowing, which result will follow setting the plow

to run an inch deeper, while the width of the slice remains the same, or taking a narrower furrow while the depth remains as before.

In plowing flat furrows, the depth may be six inches and the width ten. Or they may be seven by twelve, or six by twelve. Such should be completely turned over, grass down, with no lap whatever. A field so plowed may be harrowed with a heavy harrow, and be thus well mellowed, without danger of tearing up any of the sods.

In lap-furrow plowing, the depth being six or seven inches, the width should be about nine or ten. The slice will then be so turned that the edge of the sward would lap upon that previously plowed about two inches, if it could lie flat, but on account of the mass of earth lying upon the grass side of the previous furrow-slice, the new turned slice will lie up at an angle of about 30 deg., and the whole field, when plowed, present an appearance of even ridges or "combs." It is a matter of pride with English or Scotch plowmen to have these combs as sharp as possible, hence their plows are adapted to do that work, and the pressure brought to bear upon the long mould-boards is excessive, adding much to the draft and to the labor of plowing without commensurate, or perhaps any, good results.

Lap-furrow plowing is adapted to winter fallowing, or, as we call it, fall plowing, when no crop is put upon the land, but it is desired to expose the soil to the ameliorating influences of freezing and thawing, and is useful when some other crop than Indian corn is to be put on in the spring. It is never worth while to plow in the fall for corn.

Getting Ready for Spring.

A light and warm work-shop is a good investment. Men and boys cannot be expected to do much work if their fingers are numbed with cold, but if a suitable place and proper facilities are provided, the stormy days of winter may be turned to good account. Among the needed preparations for spring is putting the implements in good order. Not merely the mowers and other costly implements, but even the hoe and spade will do better work if properly ground. All iron and steel tools and parts of machines can be readily preserved from rust by the use of a mixture of lard and rosin, melted together (an ounce of rosin to a pound of lard), and stirred while cooling. This may be applied by means of a rag, or better, a swab, made by winding a bit of cloth around the end of a stick. Only a light coating is needed, and this is more readily applied if the article be warm. If the wood-work of machines was originally painted, it is well to repaint when necessary, but if it was merely oiled, use linseed oil again. For wood that has not been painted or oiled, crude petroleum, (several applications to saturate the wood,) is an excellent preservative. Where there are many small tools, such as the trowels, hand forks, etc., it is well to paint a portion of the handles bright red. Such affairs are quite apt to be left where last used, or dropped in going from place to place. The red makes them very conspicuous, and will often save much hunting. Besides repairing, various garden conveniences may be made. Markers of various widths are useful, though it is quite as convenient to have a marker so arranged that it will serve for several distances. The head of the marker should be a piece of scantling, and the teeth of hard wood. Placing one row of teeth nine inches apart, and the teeth of the other row a foot apart, will allow, by the use of every mark, or every other one, rows at four different distances to be made,—9, 12, 18, and 24 inches. A good wooden reel for the garden line is much more useful than the poorly made iron ones so often sold. It is well to have ready the boxes for raising plants from seeds, either in the house or in the hot-bed. Those for the window may be a foot wide, three inches deep, and of a length corresponding to the width of the window frame. Those for use in the hot-beds are most cheaply made from the boxes in which starch, soap, and other articles are purchased. These can be bought, when empty, at a low price, and by cutting them in halves, two may be made from each, the cover forming the bottom of one of them. Boxes, without either top or bottom, with mosquito netting tacked on in place of the cover, are of great service in keeping insects from melon or other vines.

Wires in the Window.

As out-door gardening is largely a matter of "sticks and strings," so the proper keeping of the window garden depends largely upon wires. It is not safe to rely upon cords of any kind for suspending baskets and pots, or for training climbers over the window frame. Copper wire costs but little, is easily fashioned into any desired shape, and does not become weak with decay. With ivy, and other vines, first place a wire where it is desired to lead the stems, and tie them to it. This is much better than to fasten the vine directly to the wall, or window casing. Pots, especially if the plants have a trailing habit, may sometimes be suspended at the sides of the window to advantage, and brackets of some cast metal are sold at the seed stores. Equally useful pot-brackets may be made from stout brass wire about an eighth of an inch in diameter and as long as necessary. A ring is first formed by bending the wire around an empty pot of the size to be used; it is then to be bent to form an arm about two inches long; bind the two parts forming this arm, with fine copper wire; then turn up one end and make a hook at the top by which to hang the bracket. Turning the other end down, let it terminate in a triangle or a ring that will rest flat against the casing to hold it steady. The arrangement of the wire is easily made. Nearly all the needed supports, such as trellises, balloon-frames, etc., may be made of stout wires, held in place by binding the parts with fine copper wire.

Plants in Cold Frames.

Those who undertake the management of cold frames for the first time, are apt to keep the plants too warm. Cabbage, cauliflower, and lettuce plants, are the kinds generally kept in the frames, and they are quite hardy. The whole treatment should be directed towards keeping the plants perfectly dormant, and it is more necessary to do this at the beginning of winter, than near the end. The sashes should not be placed over the plants until freezing weather; there are not many days during the winter on which the frames are to be kept entirely closed. The ventilation, or "giving air," as the gardeners say, is done by sliding down the sashes from the back, or, if the frames have no cross-pieces, by tilting and placing wedge-shaped blocks between them and the edge of the frame. Whenever the thermometer stands at 10° in the shade, open the sashes for an inch or two. As the temperature increases, open wider, and at 30° remove them altogether. If the plants within the frames are frozen when there is a fall of snow, they may remain in that condition for several weeks without injury; but if there is a storm, and the plants are at the time unfrozen, it will be necessary to remove the snow from the sashes, as the plants would blanch and become weak. Cauliflower plants are rather more tender than the others, and in zero weather in may be well to cover the sashes with a straw mat, or other covering.

Orchards Damaged by Animals.

Horses, cattle, sheep, and other animals are capable of doing a vast amount of injury, and indeed of completely ruining young fruit trees. Ordinarily proper attention to fences and gates will protect the young orchards. But in deep snows the fences are easily passed over; when the ground is covered, animals will browse upon twigs of various kinds, and they seem to show a marked preference for those of fruit trees. In those localities where animals are allowed to run at large, it is a difficult matter to protect a young orchard against stray beasts. Besides the domestic animals, hares, or rabbits as we improperly call them, and mice are often very destructive. Mice like to work under cover, hence there should be no dead weeds, or other rubbish, beneath which they may hide, left around the trees. In setting out trees it is well to make a sharp mound, a foot or more high, around the base of the trunk. This holds the tree firmly, and protects it from the mice. When snow falls, and is deep enough to cover the mounds, then it is the mice's opportunity, and unless prevented, there may be great destruction. Working under the light snow, the creatures can attack the bark above the mound, and they are quite careful to make their girdling complete. Every young tree should have the snow beaten or tramped down close to the trunk, making the snow so hard that the mice can not work under it. It will be troublesome, but not so much so as to try to repair damages next spring, or to replace the injured trees by others. Rabbits, on the other hand, like to work on top of the snow. We had a row of dwarf apple trees, on which one winter nearly every twig had been "shortened in," as neatly as by a knife. The snow prevented the rabbits from reaching the trunks, and they took small branches. Traps and shot are good remedies. The old preventive, to kill a rabbit and rub the tree with its opened carcase, was supposed to act as a warning to others. Its efficacy depends upon the aversion of the animal to blood. It is now a common remedy, especially with western nurserymen and orchardists, to procure blood at the slaughter house, and sprinkle the trunks of the trees. A few corn husks tied to the end of a stick is used as a swab in applying it; very little to each tree will answer.

Mould and Lice on Fruit Trees.

A correspondent in Middleburgh, Md., writes us, that he finds patches of mould upon the branches of his apple trees, and on removing the soil, the same is also found on the roots near the surface. Moreover, he discovers numerous small insects within the patches of mould. Other correspondents have from time to time referred to the same trouble, and at present it would appear to be increasing. A careful examination of the mould will show that it is a part of, or rather that it comes from, the insects themselves. The louse is about one-tenth of an inch long, and blackish in color. It exudes from its body great numbers of long, white woolly, or rather cottony, threads, which, when many insects are together, form an envelope for all, and gives the mass an appearance well described as "mouldy." At one time it was supposed the root-inhabiting insect and the one on the branches were distinct; the latter is known in England as the "American Blight," and while it appears to have been taken from this country to Europe, recent investigations have shown the two forms to be identical. Its scientific name is *Schizoneura lanigera*, while Woolly Aphis is the common name, which should be generally adopted. The root-inhabiting form is more injurious than the other, especially on young trees, where it often works unsuspected, but either form, wherever it may be, is constantly at work sucking the juices from the tree, and if not arrested will debilitate it and make it worthless. For the louse upon the roots, one of the most effective remedies is hot water. The earth is to be removed from over the roots near the surface, and boiling water copiously applied. The water will be so much cooled by contact with the roots, and the soil, that it will not injure the tree. Clear lime-water is useful; this may be made by slaking a peck of lime in a barrel, filling up with water and allowing the undissolved lime to settle until the water is perfectly clear. Water can dissolve only one seven-hundredth of its weight of lime, yet this solution has a marked caustic taste, and will kill all soft-bodied insects and worms, while it will not injure even delicate plants. The same result is sometimes produced by burying lumps of lime around the tree, but not so certainly. For the woolly aphis on the trunk and branches, and we have known it to be so abundant, that little of the trunk could be seen—a number of remedies have been proposed. These are much like that hair "invigorator" the accompanying directions of which required the user to first brush the scalp

for ten minutes, then wet the brush with the stuff and rub for ten minutes more. The brushing did the work, and so would a dry brush, well applied, dispose of this plant-louse. Grease and sulphur; soft soap, either by itself or mixed with sulphur and soot; sal-soda and turpentine, a pound of the one and a pint of the other, in ten gallons of water, have been recommended. These and similar applications will do no harm, if applied with the brush; the brush by itself will probably be quite as effective.

Cions and Cuttings.

There is a common impression that it makes no difference when cions or cuttings are taken, provided it be done before the buds start in spring. Experiments have shown that this, while it may be true with some extremely hardy trees and shrubs, is not so with all, and that a much larger share of those cut in early winter than of those made towards spring succeed. There are many varieties of fruit which are barely hardy in our climate. These have the vitality of their buds much weakened by the cold weather, but if left upon the tree they recover, and no injury is manifest. If, however, these buds (and the stem that holds them) be cut from the tree after they have been exposed during the winter, and used for grafting or as cuttings, they often fail to grow. They appear to be exhausted by the exposure, and have not, as grafts, sufficient vigor to allow them to make that growth needed to form a union with the stock, or, as cuttings, strength enough to produce roots. It is safer, as a rule, to make cuttings or cions soon after the fall of the leaves, or before the cold becomes severe. Cions should always be of the growth of the previous year, and from vigorous, healthy, bearing trees. Avoid all shoots that have made an excessive growth, as such are long-jointed, pithy, and with usually poorly developed buds; also reject such as have fruit buds. If one is cutting cions of more than one variety, care must be taken to keep them apart. Cut a smooth place on the large end of one of the cions, and write the name of the variety with a pencil. Before storing them, they should be labelled in a manner that will be sure to be legible in spring. The best material for packing is sawdust; sand or earth is often used, but the small particles adhering to them dull the knife of the grafter, while sawdust will not. Sphagnum or bog-moss is also a good material for packing. The material, whatever it may be, should be damp, but not wet. Keep the boxes containing the cions in a cellar where the temperature is but little above freezing. If in too warm a place, the buds will start and be spoiled. Should any become so dry as to shrivel the bark, they may usually be restored by placing them in moist (not wet) earth for a few days. When the bark has become plump, and the wood looks bright and fresh when cut into, the cions may be used.

Employment for Winter Evenings.

As the days grow shorter the evenings lengthen correspondingly, and by the time this number of the *American Agriculturist* reaches the majority of its readers, the nights will be at their longest. Darkness and cold do not mean inactivity for the farmer. Because the sap is not moving rapidly in the orchard and forest trees, there is no reason that there should be a sluggishness in the current of the farmer's thoughts. The crisp air ought to inspire the mind to greater activities, and together with the opportunities of comparative leisure, the winter season is the one for making a rich harvest of good ideas. The time is past when farming did not require much thought, and for this we may rejoice, as it means that a higher and better system of agriculture has come. The competition is now so sharp for the best grains and breeds of live stock, fruit and vegetables, that it pays any grower to take advantage of all the experience that others who have travelled the same road can give him. The various papers devoted to his calling furnish him with valuable hints and suggestions which he cannot afford to go without. But, perhaps, of no less value is the good to be derived from a personal interchange of ideas upon the leading agricultural problems that are being worked out in the neighborhood. In this we see abundant reason for the existence of a thriving farmers' club in every school district throughout the country. It is a great pleasure to receive the printed programmes of various societies of this sort, in which the list of subjects for the winter's consideration are set down, with, perhaps, the addition of the leading speakers for each topic and meeting. We wish that thousands more of such clubs might be formed this winter. A farmers' club is a very simple organization, and is not the monopoly of gifted minds. All that is needed is a little earnestness on the part of a few, and the society is formed and sustained without any difficulty. Let some of the winter evenings be spent in hearty and inspiring discussions at the club.

Shall we Prune in Winter.

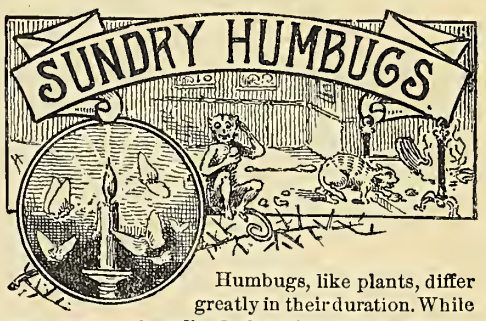
There has been a vast amount of discussion as to the proper time for pruning; some insisting that it should not be done in winter, while others hold that the proper time is "whenever your knife is sharp." There is one season especially in which pruning should not be done, viz.: during the period of active growth, from the time the buds start in spring, until buds for the next year are formed. Winter is preferred by many, as more time can be devoted to the work; and with the apple and pear, it probably does not make any difference at what period it is done between the fall of the leaf and the swelling of the buds in spring. It is not well to prune when the wood is frozen, as bad wounds and cracks may result. If young trees are taken in hand from the start, and proper attention given to forming the heads, there would be little need of severe pruning in the orchard. The too common method is, to plant an orchard and let it grow uncared for. The trees, after they begin to bear, yield fair crops for a few years, and then, when they decline and fail, pruning is suggested as a remedy. Too often the pruning is done by ignorant persons, and as a result, nearly as much wood is cut out as there is left. This great waste should be avoided. The labor of the tree, so to speak, expended to produce these numerous branches, should have been directed to the production of fruit, as it might have been had proper care been given to the orchard when young. The principles of pruning are readily understood, and one should never remove a branch, large or small, without having some definite object in view.

What to do with the Bulbs.

When a Hyacinth, Narcissus, or other Dutch bulb has once flowered it is useless to expect much from it the next year. The Holland growers, in order to get strong, vigorous bulbs, do not allow them to bloom, but cut away the flower-stems as soon as they appear. Bulbs that have had the best possible treatment in our beds and allowed to ripen well, though they will bloom the following year, will give flowers inferior to those first produced. After they have once flowered in a show bed, we find that the best use to make of them is to set the bulbs in some part of the garden to supply flowers for cutting. Bulbs in the house are either potted or made to bloom in glasses of water. Those who have purchased bulbs, do not like to throw them away, and we are often asked what can be done with them after flowering. Those that have been in glasses of water may as well be thrown away at once, as the growth of leaves and flowers have exhausted the bulbs. The case is different with those in pots; after the flowers have faded the stalk should be cut off, and then the pots may be placed at some light window and watered and cared for as long as the leaves remain green. When the leaves fade, let the earth dry; then take out the bulbs and the next autumn they may be planted in the reserve bed, as suggested for those that have flowered out of doors.

An Appropriate Holiday Gift.

We know of nothing so appropriate for a Christmas or a New Year's present to a rural friend, as a year's subscription to the *American Agriculturist*. It will not only instruct and entertain the recipient, but be a constant reminder through every month of the year, of the giver. You have only to send us the price of the yearly subscription, to wit: $1.50, and we will forward, if desired, a printed receipt to any person you may designate, stating that the year's subscription to the paper is a present from you. See complete List of Premiums elsewhere.



Humbugs, like plants, differ greatly in their duration. While some are so short-lived that they can hardly be called annuals, others continue from year to year, and are truly perennial. These long-lived schemes sometimes present various stages of development, and it is interesting to compare their present with their former condition. Take for example

"Queer," or Counterfeit Money.

When the National Banking System, an outgrowth of the war, first went into operation, the energies of a vast number of swindlers were at once directed towards offering counterfeit bills.

There was no Counterfeit Money.

The victim gave up his good money, received a lot of paper, and was at once hurried off out of the city, with injunctions not to open the parcel until he was safe at home, as detectives were watching him. Strange as it may seem, this fraud, which has for years been exposed in the papers, and sometimes in the courts, still lives, and no doubt finds its victims. We rarely hear of the cases, as the dupes keep quiet; few persons care to have it known that they endeavored to purchase counterfeit money. It is curious to observe the difference between the circular letters now sent out and those of several years ago. Instead of the long and half-blind letter, there is now sent a brief, compact note, which goes to business at once. One of the latest of these is as follows:

"New York City, 1882.

"*Dear Sir*—I desire the assistance of a shrewd man who can keep a secret and do business on the quiet, to exchange a certain kind of *Bills* which can be bought here at a large discount, and can easy be exchanged for their face value, any where. Should you feel inclined to go into a speculation of this kind please let me know at once, and I will send you full particulars, and also satisfy you that you are dealing with a genuine Firm, and not with one of the many *humbug Firms*, who represent themselves to be in the same business. Hoping you will treat this strictly confidential and let me know at once if you desire to engage.

Address D. R., New York."

"Patent Solicitor" Barrett.

We owe Mr. Barrett, "Attorney, Solicitor and Disposer of Patents," an apology. When we several months ago stated that we had received complaints as to his manner of doing business, and that his name was given in the U. S. Postal Guide in the official list of "frauds," we inadvertently gave his name as Barrit. As there is nothing more unpleasant to a sensitive person, than to be "called out of his name," as our Irish friends say, we, though rather late, make our apologies for the error, and admit that his name, as given in the official list of frauds and in some peculiar correspondence in our possession, is spelled, as the Elder Weller would say, with a *h'e* instead of a *h'i*.... Soon after our first reference to the performance of

this patent "Solicitor and Disposer," a young person called on us, claiming to be Mr. Barrett, and accompanied by a lawyer, who informed us that we had done very wrong in transcribing from an official document of a Department of the Government of the United States. And for this and for quoting from the "N. Y. Weekly Sun," a statement by a Government official in Canada that the "gentleman does not transact any business with this office," we were threatened with prosecutions.

THIS LAWYER WAS SWIFT WITH HIS THREATS,

but has been remarkably slow in carrying them out. We hope he enjoyed his interview. It appears to have been so satisfying that it has not been repeated.

But Our "Solicitor and Disposer"

turns up again. A friend in Stark Co., Ohio, brings to our notice a transaction which he thinks "for cold blooded design and rascally ingenuity, is not often exceeded." On a postal card (without date, but the P.O. stamp says Sept 22), "F. Barrett" wrote to another gentleman: "Is your Pat. of Aug. 1882, for sale. Have a buyer. Answer. Yours, &c., F. Barrett." The one thus addressed replied, stating that, with an unimportant reservation, the price for the patent was $20,000. In reply came this time a letter from Barrett saying: "The territory wanted is Canada; can get $10,000 for it. Have you a Canadian patent? If so send copy. 10 per cent. for selling." To this letter was appended a "confidential" slip, stating that the price of a Canadian Patent was $40, half of it was "government fee, and $20 my fee:" and asking as a condition precedent, that $10, "half of the government fee" be remitted when the papers would be sent. The owner of the patent wrote that Barrett might take out the Canadian Patent; sell it, and from the price obtained deduct all expenses. Barrett's reply, again on a postal, was "You must do as I write or I cannot sell. If you do not care to take out the patent, I do not. I am willing to wait for my fee till sale, but no more." To analyze this, it appears that when Barrett wrote about the patent of Aug. 1882, he knew that it was a United States, and *not* a Canadian one. But he then "had a buyer." Afterwards he states that the territory is Canada, for which he can get $10,000. He will not take out the patent and deduct the government fee of $20 from the $10,000 he is offered, but must have $10 advanced. Barrett must want $10 very badly to squirm so much to get it.

Barrett is Certified to.

In the letter of the Ohio man, announcing that the territory was Canada, was a certificate that "I have for over ten years been acquainted with F. Barrett;" "that he is thoroughly familiar with all branches of the patent business, and that he is honest and trustworthy."—This is signed by Fred'k B. Swift, and is acknowledged before Jas. W. Matthews (as near as we can make out the signature), notary public, with a big red seal attached. If the person who presented himself to us was Barrett, Mr. Swift's knowledge of him must have begun in his tender years. It is well to have it certified to that Barrett is "thoroughly familiar with all branches of the Patent Business," as otherwise no one would suspect him of vast knowledge of any kind. Is this a partnership between Swift and Barrett, or between Barrett and Swift? Whichever it may be, we hope that when they get that $10 from our Ohio friend, they will subscribe to the *American Agriculturist*, where, as the legal advertisements often say, they "may learn something to their advantage." Barrett has addressed other holders of patents in the same county in Ohio with the one above referred to, and we would merely suggest there is a tedious sameness in his postals and letters. Just for the look of it, it would be well to change the form of the bid for that $10. He evidently knows how to vary his correspondence, else the figures $10,000 and his signature would not have been in ink, apparently different from the body of the letter. And by the way, how much do the "davys" of Swift, and the "confidential" attachments cost, that he should scatter them so freely. We shall, no doubt, hear more of the adventures of Barrett, certified to by Swift, in pursuit of that $10.

Recipes for Soap, etc.

There are parties in several States, selling recipes for making soap, illuminating oils, and other things. So far as we have seen them, the recipes for oils are positively wicked, as they claim to produce a safe oil from a terribly dangerous liquid, benzine, to which nothing can be added that will make it safe to burn. The soap recipes that have come to our notice, are mainly to add borax, turpentine, and other articles to common soap, or for converting soft soap into hard. A subscriber in Armstrong Co., Pa., asks if any one can be prosecuted "for giving the recipe to a neighbor."—These fellows, in their circulars, threaten boldly. They inform those who buy their nonsensical receipes, that if they give them to others, they "will be prosecuted to the full extent of the law," but what law is not stated; we do not profess to be lawyers, but in a common sense view of the matter, we should say that, unless one has signed an agreement, or contract, duly witnessed and acknowledged before a notary, not to impart any knowledge he may possess, it would be difficult to find any law to prevent him from doing so. These recipe chaps of all kinds are nuisances to be let alone.

American Amber Wheat.

That little town in Tennessee, which formerly sent out "Hulett's Ivory" and other astonishing wheats, as well as corn of marvellous pretentions, appears to have gone out of the seed business. Still, farmers can be cheated in their seed wheat if they wish to buy "Hamor's American Amber." A maxim in law says: "False in one thing, false in all." When Mr. Hamor, in describing his "American Amber" wheat, steals mainly word for word the description of "Martin's Amber," given in the fall circular of our long time advertiser, J. A. Everitt, we wonder if he did not steal the wheat also. That "American Amber" grows so exactly like "Martin's Amber," according to the description, that there can be no excuse for keeping both on the market, and the new "American" may as well retire before the older "Martin's Amber."—*Later*, we learn that Hamor established his headquarters in a town in Michigan, and sent his circulars broadcast. As registered letters and money orders began to come to Hamor, the Postmaster of the town asked for a reference. As he could give none, the department at Washington ordered that all letters for Hamor be returned to the writers of the same.

A Forward March

may be looked for in Pennsylvania, especially in Lehigh and neighboring counties. We do not refer to the first month of spring, but to an individual of the same name. Mr. "L. J. S." writes us that he subscribed to and paid for the *American Agriculturist*, in July last; as he has not yet received a single number, he naturally wishes "to know the reason why?"—We find that Mr. S. has a receipt which is on a printed form. It reads: 187

Received of

/100 Dollars,

for

The filling in is with pencil and states that "One 50/100" Dollars has been paid for "the *American Agriculturist* for one year" and signed "Orange Judd Comp. Per March." A blank receipt of this kind should excite suspicion, as it is not likely that a house with abundant printing facilities would make use of a blank, which might as well be used for coal or cabbages as for a subscription, or one printed for two years ago. Our friends in Pennsylvania, where we are glad to know we have a vast host, should keep on the lookout for this scamp. If he pretends that he acts as an agent of the publishers, repeat his own name, or its equivalent, "get out."

No Name, but a Post Office Number

is given by many advertisers, and these are the very advertisers which our readers should severely let alone. When a person is in a legitimate business, he knows the value of his name, and takes all honorable methods of making himself and his place of business widely known. When one puts forth an attractive advertisement, and places at the end, "Address Box 54,321," in some Post Office, it is fair to assume that this person's former career has been such that it is desirable to keep his name out of sight, or that it is a direct attempt at swindling. We have the circular of

A Publisher of Masonic Books,

who gives his name, but no place of business, only a Post Office number. Now there is nothing in selling Masonic Books that any one need be ashamed of, for many of our most esteemed citizens belong to the Order, and purchase the books relating to it. "A Subscriber" inquires about this circular. We can only say that the regular dealers in Masonic Books, those who are not ashamed to announce themselves as such, and who are glad to be seen at their well known places of business, do not know anything about this advertiser, whose only address is a P. O. number. We advise all who would purchase works on Masonry to go to the regular dealers. Moreover, we advise all our readers to avoid those who give only a P. O. number, no matter what they advertise. If they are honest, they are unfortunate in making use of the very methods adopted by swindlers.

The Premium List.

Have you looked it all over and discovered what a great variety of beautiful as well as useful articles are to be found in the elegant Premium List? The very many applications made to us by letter, and otherwise, indicate that thousands of our readers have been attracted by these articles. Letters from all over the country inform us that subscribers, and those who are not subscribers, are working for these Premiums. Scroll Saws, Watches, Books, Household Articles, Musical Instruments, Clothing, Jewelry, Farm Implements, etc., etc., are being secured in large numbers. In fact, everybody can, through this Premium List, obtain almost anything they want, by securing subscribers to the *American Agriculturist*. If any subscriber has lost or mislaid his Premium List, we shall be pleased to send another.

Savoy Cabbages in the South.

The Savoy varieties of cabbage differ from the common sorts in having the leaves deeply wrinkled, and the heads of superior delicacy, approaching the cauliflower in fineness of flavor. The best seed bed is a moist loam. The seed may be sown in January in a cold frame, or in the open ground, which may be covered with litter, if protection is needed against untimely frosts. A still better way, as thought by some successful growers, is to throw the ground into ridges two feet apart, running east and west. Set the young plants on the south side of these ridges where they will be shielded from the cold north winds, and exposed to the warmth of the sun. A slight covering of straw may be put on during the severest weather, which should be removed as soon as mild weather comes. The ridges are generally levelled by cultivation during the spring, and a fine early crop may be expected. This ridging has a beneficial effect in the killing of many cut-worms. The cabbage ground should be enriched with well decomposed stable manure. Bone-dust and superphosphate of lime have a good effect upon the growth of cabbages. Salt applied to the land some months before the cabbages are set, aids in destroying the cut-worms and thereby increases the crop.

Plants raised in the cold frame will be ready to transplant about the middle of February. A moist day is best for this work, and it is well to wet the roots before the plants are set. Cabbage plants respond quickly to high culture, and the soil should be frequently stirred with the hoe. The secret of growing early cabbages is in having the soil rich and stirring it often with cultivator and hoe.

Experiments with Potatoes.

BY PROF. J. W. SANBORN.

In the November *American Agriculturist*, Major Alvord in opening his report of potato experiments says: "These tests have seldom been repeated by the same person; and hence have been of little value." The interest now excited in the question regarding cutting potatoes; the fact that my trials have been conseeutive for six years, and the results contradictory to the commonly received notions, warrant me in condensing facts, and forming the table presented below. This table shows the scheme of the trial, excepting that the potato from one-eye plantings were cut into one-eye pieces for next year's seeding; and from two-eyes plantings into two-eyes; whole large seed from lot so seeded to whole large potatoes the previous year, etc. In the same manner the selection went down from the second to the sixth year. It was my endeavor to find what effect, if any, cuttings or plantings of small potatoes had on the constitutional vigor of the plant. The results showed from the start, a vast difference in the vigor of the tops from the various seedings standing in the same order as in table of results, but in a marked degree in favor of whole large potatoes. The experiments give no evidence that cuttings or small seed is followed by degeneracy. The best results were with whole large potatoes, in each year and unmistakably.

The soil devoted to these experiments was an alluvial clay, and the seed used was of the Early Rose variety. The kind of seed is liable to vary the results, as the number of eyes varies in the different sorts, and the number of stalks will not be the same; and this may affect the comparative results of a cut potato against a whole one.

The first column in each couplet gives the potatoes fit for table use, and the second the total crop in bushels per acre.

Year.	Whole Potatoes, Large.		Whole Potatoes, Small.		One Eye to Hill.		Two Eyes to Hill.		Three Eyes to Hill.		Seed End.		Stem End.	
1st.	89.2	189.4	52	104	36.6	56.3	65	102	68.8	111.8				
2d.	221.6	403	280	344	133	176	127	191	136	200	130	214	129	220
3rd.	176	253	144	189	44	73	70	92.6	140	181	143	2-1.5	94	140
4th.	110	174.6	84	135.4	25	54.6	72	109.9	78	123.7	48	100.3	68	133
5th.	159	265.3	140.7	216.4	73.9	106	126	158	125	125	179	193	13	195.7

The average yields for five years, stated in the same order as in the table, is as follows: from whole potatoes, large, 257.1 hu.; whole potatoes, small, 197.7; from one-eye cuttings, 93.2; two-eyes, 130.7; three-eyes, 148.3; from seed end, 177.2; stem end, 172 bushels per acre. I might have added the cash value of the crops, but the differences are so heavily in favor of the large whole potatoes, that it does not seem at all necessary.

Climbers in the Window.

We are asked to state the best climbers for window culture, without being told of the aspect of the window or the average temperature of the room. There is no climber so generally useful as the European Ivy, but it is of slow growth, and the inquirer is probably at a distance from greenhouses, where he could procure a large one, already grown. For immediate effect, a tuber of the Maderia Vine would answer. A Sweet Potato, if once started in a warm place, will make a rapid growth of vine. It should have its lower two-thirds in water in a jar or vase of some kind. A most rapid grower is the vine known as German Ivy or Parlor Ivy; it is not an Ivy proper, or related to it, but a climbing Senecio. It will not bear the least frost, but in a warm room will soon drape the windows with a luxuriant growth. If none of these are available, then fall back on the annuals, as seeds may always be procured by mail—indeed, so can most plants, if small. The "Canary Creeper" is a good window plant, it is a Tropæolum, and own brother to the common Nasturtium of the garden, which also will do well in the window, though some of the perennial sorts are better. *Thunbergia alata*, for which we know no common name, is also raised from seeds, and as well as the Tropæolums, is likely to bloom. After all, the Ivy is much better than any other house climber, as this has foliage which can be washed with a sponge or cloth, and be kept in health, while this can not easily be done with the others. We would advise making a start with Ivy, even if small, and regard the others only as makeshifts to use until that is large enough.

Care of Poultry in Winter.

Poultry-houses should be warm, and yet well ventilated, perfectly dry, light, and provided with dusting boxes. If the manure heap from a stable of cows and horses is under a roof, it is not a great task to close in the mauure shed, placing windows in the south and east sides, and arranging for roosts for fowls, as well as laying boxes. They will scratch over the heap, enrich it with their own droppings, keep warm, and keep laying. This is one of the most economical ways of keeping fowls. Their feeding boxes can be suspended or placed upon a movable platform, and if this and the dusting box be occasionally shifted, they may stand on the levelled top of the manure heap. There seems to be a natural connection between fowls and the dung hill, which this plan of keeping them recognizes. This seems at first as contrary to the axiom that "Poultry houses should be kept dry,"—and though the manure heap is actually moist, it is for poultry, especially for fowls and ducks, a healthy moisture. The ventilation however must be good; the dusting box near by, and the roosts low. I have practised this system for some years, and never fail to have eggs in winter, but do not advocate it on the score of neatness. I have the cow dung thrown under the roosts frequently, which prevents active fermentation and loss of ammonia. In case it is not deemed best to employ the source of warmth above named, artificial heat may be introduced into the poultry house. Oil stoves offer a means of warming a house, which is both convenient and safe. If a trench be dug through the middle of the floor of the house, and a brick flue laid under the floor, connecting a shallow pit at one end, with a piece of stove-pipe two to four feet high at the other—all inside the house—an oil stove having eight inches of wick for every 500 cubic feet of air, will temper the air of the house, so that in this latitude water will never freeze, provided the walls are reasonably tight. The shallow pit laid with bricks and cement, should be covered with a smooth flagging stone, and this with a hoard in case the stove gets very hot. The edge of the pit must be framed to protect it, and at one side of the stove a brick or two must be left out for air. This arrangement will warm the earth floor over a space a yard wide, and besides the warm air will issue freely from the pipe. Care is needed not to have the wick so low that imperfect combustion takes place, giving off bad odors. This plan of placing the oil stove under ground, is much better than having it exposed. The whole expense of this way of warming is very little; if the stove be lit at 9 to 10 o'clock, it will be necessary only to burn it until sunrise, and a quart or so of kerosene will be all that need be consumed each twenty-four hours for warming a small house. It is desirable that the temperature of a poultry house should not fall much below freezing. A warm house breeds vermin even in winter. The preventive and remedy for all kinds of lice upon fowls is dust. Into this a little ashes, dry-slaked lime, and now and then a handful of flowers of sulphur, may occasionally be thrown into the dusting box, and if the dust is kept clean and dry, and is fine enough, the whole house, roosts, nests, and all will be covered with it. Double glazing of the windows, or greenhouse sashes used in poultry houses, is a great advantage; by this, a disagreeable dripping is prevented in cold weather.

American Woods.

Fuel Value, Weight per Cubic Foot, Ash, and Specific Gravity.—Important Experiments.

Among the many valuable series of observations, collection of facts, statistics, etc., undertaken in the recent Census, was an effort to obtain a complete examination of no less than 419 varieties of woods growing in the United States. Herewith will be found a condensation of four items, for each of 75 kinds of wood most abundant in our country. At least two specimens of each species were used, and of woods of commercial importance, specimens were taken from many trees growing in widely different localities, and under a variety of conditions as to soil and climate, and the average result is stated in the annexed table. Blocks of exactly uniform size were prepared, and these were entirely freed from sap and moisture by thoroughly heating them at a temperature of 212° (100° centigrade). The figures in the table therefore refer in every case to the absolutely dry wood. For convenience of referenee, the country is divided into the Atlantic and Pacific Regions, the dividing line following the eastern hase of the Rocky Mountains.

Common Name.	*Botanical Name.—Region.*	*Specific Gravity.*	*Average per cent of Ash.*	*Weight of Cubic Ft. in Lbs.*	*Relative Fuel Value.*
Cucumber Tree.	Magnolia acuminata.—*At.*...	.4815	.30	30.00	480
White Wood.....	Liriodendron tulipifera.—*At.*	.4008	.24	26.22	420
Basswood	Tilia Americana.—*At.*.....	.4525	.55	28.30	450
Lignum Vitæ.....	Guiacum sanctum.—*S.-tr. Fl.*	1.1432	.82	71.24	1134
Prickly Ash.....	Xanthroxylum Ame'num. *At*	0.5652	.57	35.22	562
Hop Tree.....	Ptelea trifoliata.—*At.*.....	.8319	.30	51.84	829
Mahogany..	Swietenia Mahagoni. *S.tr. Fl.*	.9196	.73	57.31	913
Holly..... ..	Ilex opaca.—*At.*.....	.5818	.76	35.26	577
Holly.....	Ilex cassine.—*So. At.*.....	0.7270	.87	43.30	737
Ohio Buckeye....	Æsculus glabra.—*At.*.....	.4542	.81	28.30	450
Sugar Maple.....	Acer saccharinum.—*At.*.....	.6827	0.58	42.54	679
Silver Maple.....	Acer dasycarpum.—*At.*.....	.5469	0.33	32.83	525
Red Maple	Acer rubrum.—*At.*.....	.6245	.37	38.92	622
Box Elder.....	Negundo aceroides. *At.&Pac.*	.4328	1.07	26.97	428
Locust.....	Robinia pseudacacia.—*At.*....	.7333	.50	45.70	730
Boxwood.....	Sophora secundiflora. *W.Tex.*	.9842	1.59	61.33	969
Coffee Tree.....	Gymnocladus Canadensis. *At*	.6934	0.67	43.21	689
Honey Locust....	Gleditschia triacanthos.—*At.*	.6707	.81	41.80	665
Wild Plum.....	Prunus Americana.—*At.*.....	.7215	.18	44.96	720
Wild Cherry.....	Prunus serotina.—*At.*.....	.5822	.15	36.28	581
Crab Apple.....	Pyrus coronaria.—*At*	.7049	.52	43.93	701
Mountain Ash....	Pyrua sambucifolia. *At.&Pac*	.5828	.35	36.22	581
Scarlet Thorn.....	Cratægus coccinea.—*At.*.....	.8618	.38	53.69	859
Sweet Gum.....	Liquidambar styraciflua—*At.*	.5946	.61	37.05	591
Mangrove.....	Rhozophora mangle. *Gulf Co.*	1.1617	1.82	72.40	1141
Flower'g Dogw'd.	Cornus florida.—*At.*.....	.8153	.67	50.81	810
Sour Gum.....	Nyssa sylvatica.—*At.*.....	.6399	.52	39.88	637
Sorrel Tree.....	Oxydendrum arboreum. *So.A*	0.7458	.37	46.48	743
Satin Wood.....	Chrysophyllum oliviforme *Fl*	.9360	1.24	58.33	924
Persimmon.....	Diospyros Virginiana.—*At.*..	.7908	.96	49.28	783
White Ash.....	Fraxinus Americana.—*At.*...	.6530	.42	40.70	650
Black Ash.....	Fraxinus sambucifolia. *No At*	.6317	.72	39.36	627
Catalpa.....	Catalpa bignonioides.—*At.*...	.4474	.38	27.88	446
Western Catalpa.	Catalpa speciosa.—*At.*.....	.4155	.59	25.58	414
Red Bay.....	Persea Carolinus.—*So. At.*...	.6429	.76	40.07	638
Sassafras.....	Sassafras officinale.—*At.*....	.5062	.08	31.50	506
Slippery Elm.....	Ulmus fulva.—*At.*..... ...	.7035	.83	43.85	698
White Elm.....	Ulmus Americana.—*At.*.....	.6516	.80	40.61	647
Rock Elm.....	Ulmus racemosa.—*At.*.....	.7263	.50	45.26	723
Mulberry.....	Morus rubra.—*Mx. b.*.....	.7715	.53	48.08	767
Osage Orange....	Maclura aurantiaca. *So. W.At.*	.7668	.88	47.79	760
Sycamore.....	Platanus occidentalis.—*At.*...	.6005	.46	37.42	598
Butternut.....	Juglans cinerea.—*At.*.....	.4086	.51	25.46	407
Black Walnut....	Juglans nigra.—*At.*.....	.6143	.70	38.28	610
Shell Bark.....	Carya alba.—*At.*.....	.8372	.73	52.17	831
Pig Nut Hickory.	Carya porcina.—*At.*.....	.8417	.87	52.45	834
White Oak.....	Quercus alba.—*At.*.....	.7458	.41	46.36	741
Red Oak.....	Quercus rubra.—*At.*.....	.6612	.26	41.21	660
Pin Oak.....	Quercus palustris.—*At.*... .	.6938	.81	43.23	688
Chestnut Oak....	Quercus Muhlenbergli.—*At.*..	.8395	1.21	52.32	829
Live Oak.....	Quercus virens.—*So. At.*.....	.9504	1.14	59.23	940
Chestnut.....	Castanea vesca.—*At.*.....	.4504	.20	28.07	450
Beech.....	Fagus ferruginea.—*At.*.....	.6883	.51	42.89	685
Hop Hornbeam...	Ostrya Virginica.—*At.*.....	.8283	.50	51.61	824
Hornbeam.....	Carpinus Caroliniana.—*At.*	.7258	.83	45.23	720
White Birch.....	Betula alba.—*No. At.*.....	.5760	.29	35.90	574
Cottonwood.....	Populus angustifolia. *Int.Pa.*	.3912	.79	24.32	388
Cottonwood.....	Populus monilifera. *At&Pac*	.3889	.96	24.24	385
West. Arbor Vitæ	Thuja occidentalis.—*No. At.*	.3164	.87	19.72	315
Cedar.....	Juniperus Californica. *So.Pa*	.6282	.85	39.15	633
Red Cedar.....	Juniperus Virginiana. *A.&P.*	.4296	.13	30 70	491
Redwood.....	Sequoia sempervirens.. *C.C.*	.4208	.14	26.22	420
Yew.....	Taxus brevifolia.—*No. Pac.*..	.6391	.22	39.83	638
White Pine.....	Pinus Strobus.—*No. At.*.....	.3842	.19	23.94	384
Sugar Pine.....	Pinus Lambertiana. *No. Pac.*	.3684	.22	22.96	368
Giant Yellow Pine	Pinus ponderosa.—*So. Pac.*..	.4771	.33	29.73	475
Pitch Pine.....	Pinus rigida.—*At. Coast*.....	.4957	.24	30.89	495
Yellow Pine.....	Pinus mitis.—*At.*.....	.6104	.29	38 26	607
Black Spruce.....	Picea nigra.—*No. At.*.....	.4584	.28	28.57	457
White Spruce.....	Picea alba.—*No. At. & Pac.*..	.4051	.32	25.24	404
Hemlock Spruce.	Tsuga Canadensis.—*No. At.*..	.4202	.46	26.18	418
Balsam Fir.....	Abies balsamea.—*No. At.*....	.3819	.45	23.80	380
Tamarack.....	Larix Americana.—*No. At.*...	.6236	.33	38.86	622
Palmetto.....	Sabal Palmetto.—*So. At. C.*..	.4404	1.66	27.44	407

THE ABBREVIATIONS are: *At.*, the Atlantic Region. *Pac.*, the Pacific Region. *No. At.*, Northern Atlantic. *At. C.*, Atlantic Coast. *So. At.*, Southern Atlantic. *S.-tr. Fl.*, Semi-tropical Florida. *W. Tex.*, Western Texas. *No. Pac.*, Northern Pacific Coast. *Int. Pac.*, Interior Pacific Region. *Mx. b.*, Mexican border.

The Fuel Value, in last column, is important. The value of any wood for heating purposes will be seen by comparing its figures with those of some wood the reader is accustomed to use. Thus Beech is 685, Chestnut 450, Cotton-wood 388, Hickory 831, Maple 679, each taken thoroughly dry.

The Ration for Maintenance of Animals.

BY DR. G. C. CALDWELL.

As a basis of operations in stock feeding, it is useful to know what is the ration required for mere maintenance of the animal. It is not profitable to allow a beast to waste away on insufficient food, if this loss of flesh must be made up again in the following season. The farmer should not try to carry more stock over winter than he can feed well, so that there will be something to show in the shape of animal produce, milk or meat, as well as good manure in the yard. It is better still not to so overload himself with stock as to be obliged to partially starve it to carry it over. It is an easy and apparently cheap operation to keep animals for a time on their own flesh and blood, but it costs more than it comes to, as will be learned when it comes to building the animal up again.

Wolff says that the daily ration for mere maintenance of an animal in average condition, should contain for 1,000 lbs. live weight 14 to 15 lbs. of dry substance, in which there should be .75 lb. of digestible albuminoids, and 8.25 lbs of digestible non-nitrogenous or non-albuminous matters; and, further that there should be the equivalent in fatty and starchy matters of not more than 11 to 12 parts of non-nitrogenous substance, or respiratory matters, to one of albuminoids, or flesh-forming matters. The experimental basis for these estimates for beef cattle is not a very broad one. It comprises, (1) two experiments extending over four weeks each at Weende, Germany, with one ox, and three experiments with another ox; (2) a winter's feeding of the working oxen of a farm in Weende, in which the animals, weighing about 1,400 lbs. each, gained 70 to 80 lbs.; (3) a winter's feeding of the oxen on another farm; (4) another pair of experiments with two oxen, extending over a period of about nine months, during which the rations were changed every two or three weeks, but still kept low in quality; (5) another experiment with one ox extending over about four months. On the results of these few feeding trials in which the ration was carefully analyzed the estimates above given are based. Other experiments have not since been made in Germany, to test the correctness of the estimate. It is well known that Professor Sauborn, in his numerous feeding experiments at the New Hampshire Agricultural College, kept animals for many weeks, not only without loss of weight on a ration very much poorer than this maintenance ration, containing a smaller proportion of the important albuminoids, but the animals even gained in weight. On a ration about equal to the maintenance ration they gained 1.37 lb. a day per 1,000 lbs. live weight. Even on a ration with so low a proportion of albuminoids that there was but one part of these to 21 of non-albuminous digestible matter, there was a gain in one case of almost .9 lb. a day.

At Cornell University three steers, fed six weeks on a ration containing for 1,000 lbs. live weight, .8 lb. of digestible albuminoids and 8 lbs. of non-albuminous matters, gained 2.25 lbs. per day for 1,000 lbs. live weight; the average aggregate weights of the three animals were for the successive weeks as follows: 2,535, 2,571, 2,590, 2,633, 2,685 and 2,773 lbs. Here was unmistakable and not unimportant gain, more than would be expected, even though the ration is somewhat richer than Wolff's maintenance ration. Its nutritive ratio was 1 to 10, instead of 1 to 11 or 1 to 12, as Wolff requires. This ration was per 1,000 lbs. live weight and per day, 14.2 lbs. of corn-stalks, 3.8 lbs. of clover hay, 1.9 lb. of corn meal, and .84 lb. of malt sprouts. The composition was calculated not from the usual tables of the composition of fodder, but from analyses made of each article of fodder in the chemical laboratory.

Several years ago a large number of feeding experiments were reported by Messrs. Lawes and Gilbert in the "Journal of the Royal Agricultural Society," (Eng.) In four of these, where the gain per 1,000 lbs. live weight was about a pound a day, I have calculated the composition of the ration, from the usual tables of composition and digestibility of foddering materials; these four rations were as follows: (1) 5.26 lbs. oil cake, 8.6 lbs. of clover and 30 lbs. of swedes; (2) 6.9 lbs. of rye grass hay and 123 lbs. of swedes; (3) 3.75 lbs. of bean meal, 5.6 lbs. of straw, and 80 lbs. of swedes; (4) 1.4 lb. of oil cake, 1.18 lb. of bean meal and 94 lbs. of swedes.

The nutritive ratios, expressing the relative proportions of albuminous and of non-albuminous matters were in the several cases 1 to 3.3, 1 to 5.4, 1 to 4.5 and 1 to 4. The gain was smallest on the first ration, or a pound a day, and largest on the last ration, or 18.5 oz. a day for 1,000 lbs. live weight.

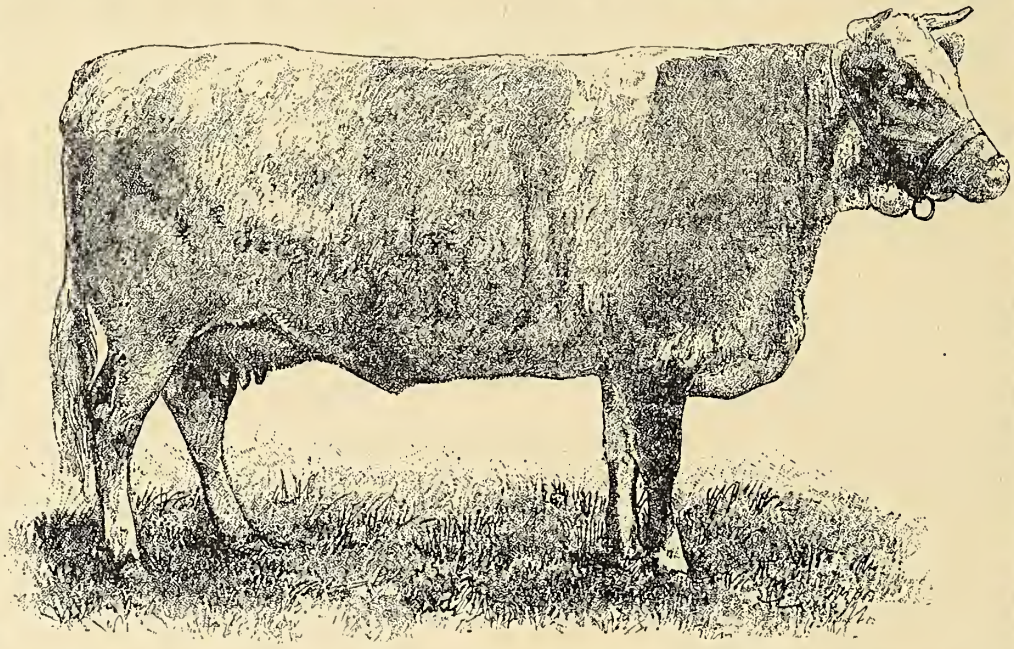


Fig. 1.—THE PRIZE SHORTHORN COW "CZARINA MANORAVON."—*Engraved for the American Agriculturist.*

A Good Investment.

A young man in Northampton Co., Pa., writes us that he is now twenty-one years old, that in some of the mountainous parts of his State he can buy land at 25 cts. an acre, and he proposes to purchase a large tract, and plant it to Black Walnut trees. He asks our opinion of this as an investment. On general principles, we judge that it would prove highly profitable. But a number of points are to be considered. Has the native timber been cut off, or is the land so situated that the timber will pay for the clearing? Of course, one can not grow Walnut trees on land already occupied. Black Walnut is now in great demand, not only in this country, but abroad. The wood-workers of England have already noticed the great superiority of the timber grown on the sterile lands of the Eastern States over that more rapidly grown on the richer Western lands. While the demand for Black Walnut timber is rapidly increasing, the supply is annually decreasing. There are thousands of acres, utterly useless for tillage, that might, at a small outlay, be planted with some trees if not in black walnut, and in twenty years yield splendid returns. This is something for young men to think of; let them follow the example of our friend in Pennsylvania, and begin now. Having the land, the next point is, to secure the nuts. These should be kept during the winter where they will not become dry. A few may be placed in a box, or barrel, with sand. Larger quantities may be placed in heaps of a few bushels each, and covered with sods, or as pits of roots are covered, with a layer of straw, over which is thrown a few inches of earth. Young farmers, there is money in raising Black Walnut trees, provided you have land that is fit for nothing else, and will have patience to wait for its slow but sure returns.

Bee Notes for December.

Our Conventions.

A leading cause for the recent rapid progress in Apiculture, is to be found in our numerous Conventions. These County, District, State, Interstate, and National meetings, to consider, and discuss important questions, are now numbered by hundreds, and are lending a powerful influence to develop practical apiculture. The most influential of all these societies is the North American Association. This gathers the "meat" from all the lesser associations and freely distributes it to the whole country. Reports were made at the recent Cincinnati Meeting from nearly all the States of the honey yield for the past season. The records for the South and West were encouraging. The South especially has had a wonderful yield of the best honey. In the East, and north from Ohio, the yield has been unprecedentedly light. In Southern Ohio, and portions of New York and Canada, the report is of an entire failure. In California and the East, the crop is poor. From these reports we gather three important facts: first, cold, no less than excessive drouth or wet, will dry up the nectar glands, and blast the bee-keeper's hopes. Secondly, the Gulf States, especially Texas, bid fair to rival California as honey producing regions. The winters are as safe, the honey season as long, and the seasons more sure. Thirdly, the South can furnish as fine honey as any section of the United States. Honey exhibited from Florida, Mississippi, and Texas, was greatly admired. From these reports, we also learn an important lesson: that to secure a certain harvest, bee-keepers must grow special honey plants. Then, if the White Clover, or the Basswood fail, we still have hope.

Supply cannot equal the Demand.

If rightly managed, it is impossible to clog the market even with extracted honey. Pure honey in every sales-room, and factory, put up in the best style, will sell in almost unlimited quantity. Overstocking the market need no longer be feared.

The President, in his address, referred to the importance of improving our bees. In some places black bees have been fed through the season, while Italians, and especially Syrian bees, gathered considerable surplus. In speaking of the good work done by our improved Exhibitions at fairs, he said, "Let all apiculturists work for larger premiums at our fairs, for separate buildings, for honey and bee exhibits, and for the right to make sales on the grounds, providing the exhibition is in no wise injured thereby, and most important of all see to it that the exhibitions are excellent." Reference was made to the bee tent, of thin gauze or mosquito netting. This covers the person and the

hive, while the bees of the latter are being handled. Thus manipulated bees will not sting, even when not gathering honey. There is a need of more accurate statistics as to the magnitude of the bee and honey interest of the country.

Chicken, or Fowl Cholera.

A few years ago inquiries about "Chicken Cholera" came only from the Southern and Western States. Of late, we have had them from the Eastern States, including New England. When domestic animals die off suddenly, by a rapidly fatal disease, it is the custom to call it "Cholera." This was the case with the so-called hog-cholera, which has been shown to be a complication of diseases, readily traceable to neglect and bad management. From what we have heard of Chicken Cholera, it appears to be a protest against improper feeding and housing, rather than any well-defined disease, such as roup, etc. Fowls are often in poor condition on account of the vermin they are obliged to support, or they may be in impaired health from continuous feeding on corn alone. When in this weakened state, a sudden change in the weather may induce diarrhœa, or a cold, which attacks the flock so generally that the disease appears to be epidemic. And being generally and rapidly fatal, it is called "cholera," and the owner of such a flock at once writes us for a remedy for "chicken cholera." A recent letter, from a friend in Massachusetts, is the type of many others received of late. This informed us that some of the fowls would leave the rest of the flock, go off and mope by themselves, refuse to eat, and, as a general thing, those so affected soon died. The writer assumed this to be cholera. Our reply was essentially as follows: Separate at once, the sick birds from the well. If the poultry house has not recently been put in order, remove all the fowls until it can be fumigated, by burning sulphur, and then whitewashed in every part of the interior with lime-wash, to each pailful of which half a pound of crude carbolic acid has been added. Mix some lard and kerosene, and with a rag, or swab, rub all the roosts. Throw out all the old straw from the nest boxes, and grease with the lard and kerosene the insides of these. Renew the dust boxes, using fine road dust, or finely-sifted coal ashes, mixing some Flowers of Sulphur with the dust. Empty and thoroughly wash the water vessels, or drinking fountains. When the fowls are returned to the house, alter their feed. Corn, which is often the only food, should be given but once a day, and preferably at night. Give boiled potatoes and meal mashed together; wheat screenings, and an occasional feed of oats, barley, or rye. Above all, have fresh vegetables. Cabbages which have been boiled, or cabbage stumps, should be placed where the birds can help themselves; if these are not at hand, give the outer leaves of good cabbages, rutabagas, mangels, or other roots, not forgetting fresh scraps from the kitchen. Lastly, add some preparation of iron to the drinking water. This may be the Tincture of the Chloride of Iron, always kept at the drug stores, but an equally useful, and much cheaper form of iron, is that known in England as "Douglas' Mixture." Place in a stone jug, one gallon of water, add four ounces of Sulphate of Iron ("copperas"), and half an ounce of Sulphuric Acid (oil of vitriol). When the Sulphate of Iron is dissolved, the mixture is ready for use. A teaspoonful of this is to be added to each pint of the drinking water. The Tincture of Chloride of Iron, mentioned because it may be had at once, may be added to the water in sufficient quantity to give it a distinct taste. As to the sickly fowls, keep them apart, giving warmer quarters in cold weather. Furnish a variety of food, including warm mashed potatoes, with a dash of Cayenne pepper, and also iron in the water. Some have advised doses of Calomel, or Blue Pill, but we doubt if anything beyond good nursing and the changes of diet we have advised will be of much service.

Provide a Snow Plow at Once.—Shovelling snow soon becomes hard work; a snow plow, with a horse to draw it, is a great improvement over the shovel. Indeed the difference is quite as great as in working land by the plow and with the spade. If one has a snow plow, he is quite sure of the help of all the boys (if not the girls too,) of the neighborhood, who make a great frolic, and are often useful in adding needed weight to the plow. A snow plow may often be a matter of co-operation among neighbors, if not in owning, at least in working it. In every well managed village one should be owned and operated for the general good. Even where the paths are not long enough to allow of the use of a horse, a hand plow, save in very deep snows, is preferable to the shovel. In building a snow plow take great care to make it very strong, as the strain is often severe.

English Prize Pure Blood Cows.

We herewith present engravings of prize animals in each of three of the leading breeds of cattle. The Shorthorn, fig. 1, is a noble product of fine breeding, and represents a style of animal always pleasing to the eye. As a beef breed the Shorthorns are not excelled. A good Shorthorn bull, when introduced into a herd of native stock, will improve it greatly at very little expense. In this way there is much still to be done in bringing up the quality of our western beef. "Czarina Manoravon" does not have "a lean and hungry look," and the portrait shows many strong Shorthorn points. The Ayrshire cow, fig. 2, is the type of a remarkable breed of cattle that has gained a world-wide reputation for good milking qualities. This is one of the oldest breeds, and had its origin in a mixture of fine races. Care in breeding and management has developed such animals as "Flora," here given. The portrait shows the heavy hind-quarters and large udder, together with the other important features of a cow that should be the pride of any milk-producing herd. The Guernsey cow, "Lady Emily Foley," fig. 3, was first in her class at the great show at Reading, England, and a fine representation of a most valuable breed. The Guernseys are but little known in the United States; they are similar in build to the Jerseys, though somewhat larger and not so stylish. The Guernsey cow is remarkable for the richness of the skin, it being soft and of a golden-yellow color, especially within the ears and on the udder. The Guernseys are large milkers, and produce the yellowest butter of fine quality. In disposition these cattle are remarkably gentle, and through kind treatment and good selections, the breed, on its native Channel Island, has been brought to a high state of perfection. The three portraits represent as many different departments in cattle growing. In the Shorthorn cow we see that every thing is secondary to the production of a large amount of rich, juicy beef. The Ayrshire, so to speak, is a factory for the conversion of grass and grain into an abundant flow of milk, while the Guernsey cow yields a butter that is remarkable for its deep yellow color and other superior qualities. The three cows make a fine group.

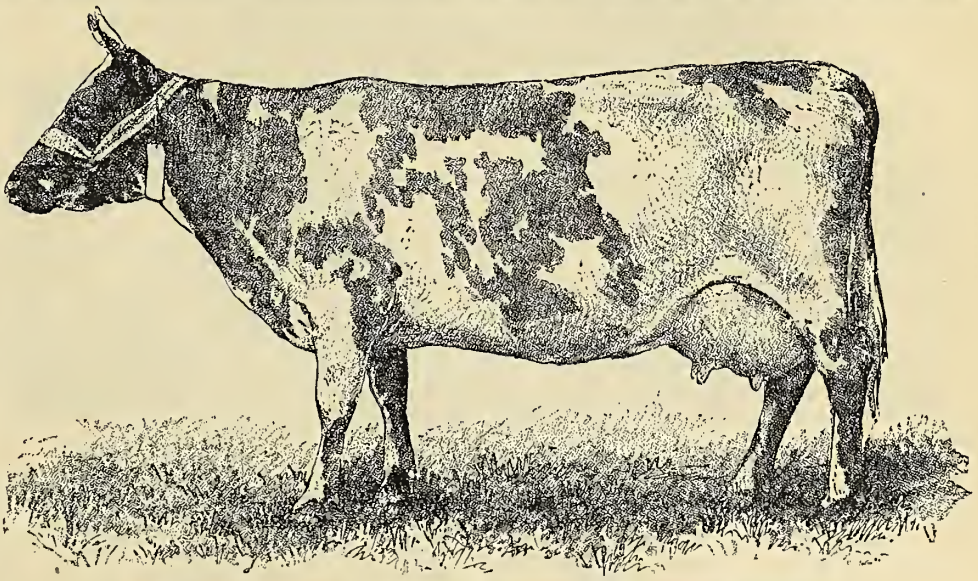


Fig. 2.—THE AYRSHIRE COW "FLORA."—*Engraved for the American Agriculturist.*

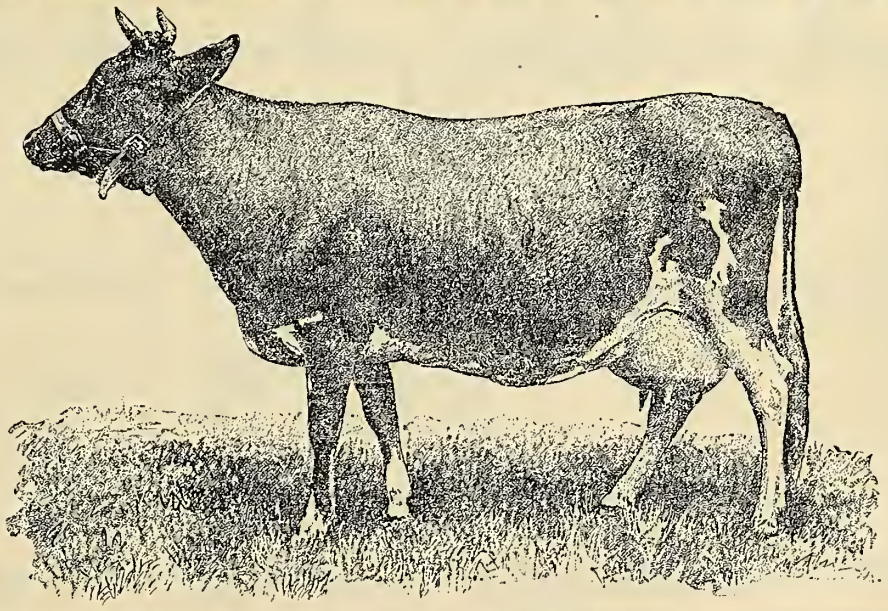


Fig. 3.—THE FIRST PRIZE GUERNSEY COW "LADY EMILY FOLEY."—*Engraved for the American Agriculturist.*

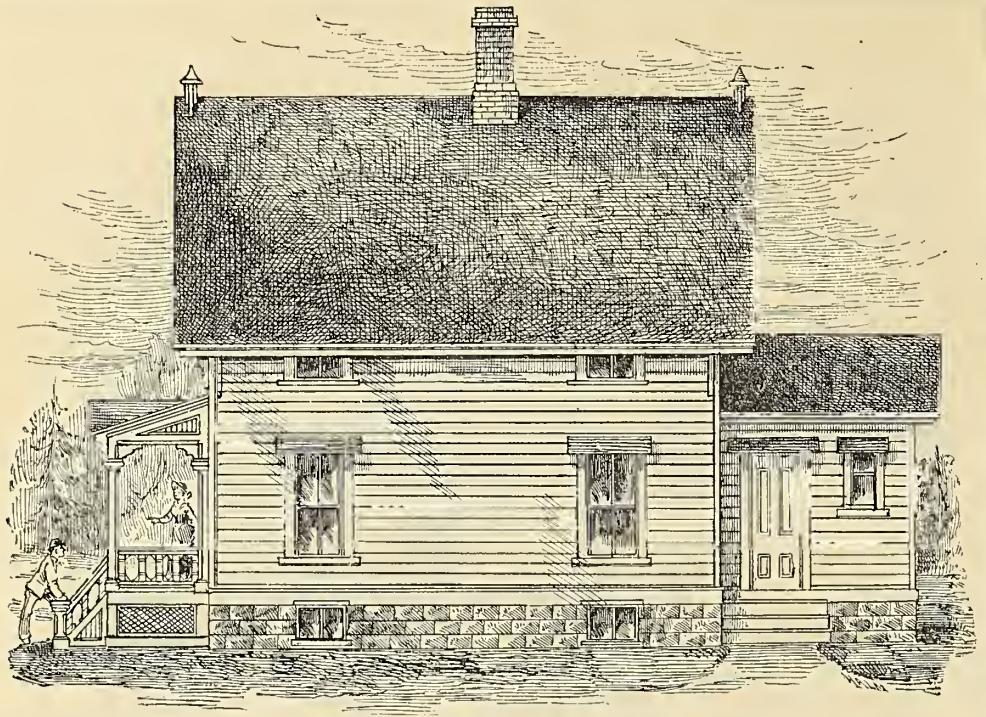


Fig. 1.—SIDE ELEVATION OF COTTAGE.

A Country House, Costing $500 to $800.

As Here Shown and Described, $724.43.

CLASS I.—FROM PRIZE COMPETITION PLANS—BY EDWARD PRATT, HANOVER, MICH.

In selecting from the 183 Farm House Plans competing for the *American Agriculturist* prizes, the Judges found it very difficult to decide between quite a number in each class. A plan submitted by Mr. Edward Pratt possessed many points entitling it to be chosen as one of the first three, but the judges in their report say: "We deem the estimate of cost too low for average localities.... The plans are very neatly executed....The rooms are rather small. A trifle more expense would add to the size and hight, and largely increase the convenience of the rooms—a foot additional would make much difference in this respect....The cellar better go under the whole house, as the excavating would be but a trifle, and the extra cross foundation would cover part of cost of extending the side foundation down to full depth....Giving the stairs a *turn*, would save room in both the lower and upper halls...."—We give Mr. Pratt's specifications nearly as written:

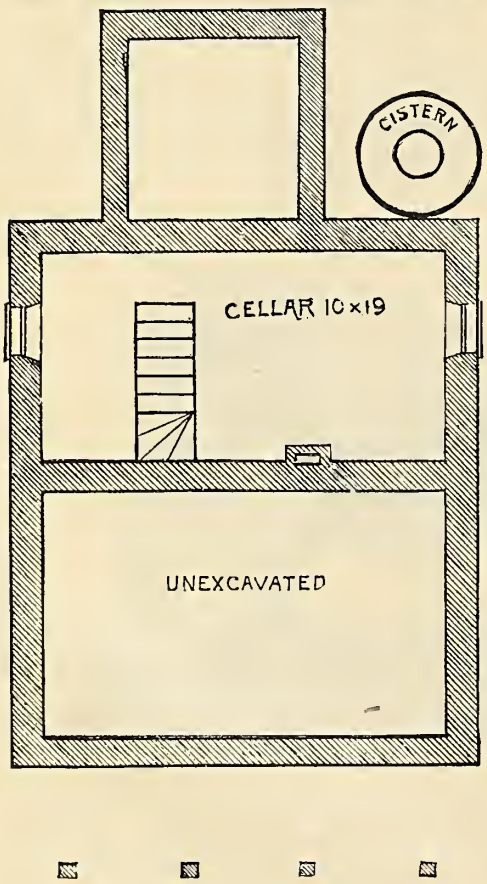


Fig. 3.—PLAN OF CELLAR.

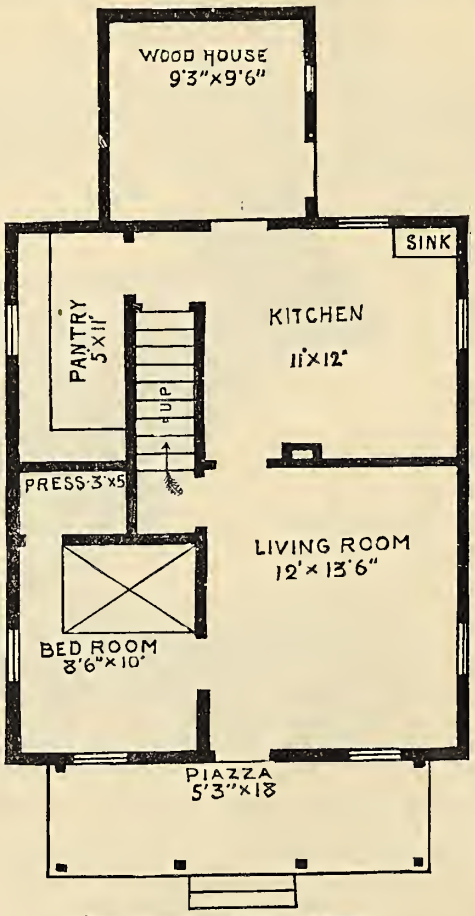


Fig. 4.—PLAN OF FIRST STORY.

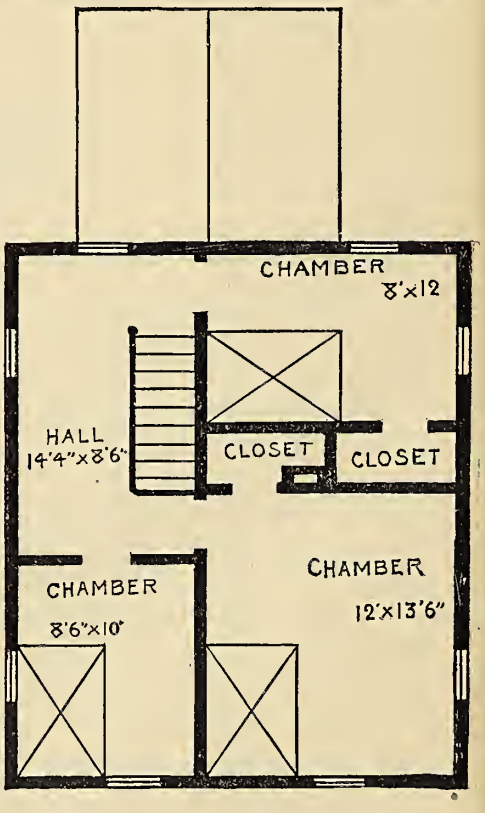


Fig. 5.—PLAN OF SECOND STORY.

The building is a balloon frame. The studs, floor, joists, rafters, and collar joists are placed 16 inches from centers; sills, 6 by 8 in., framed together; floor joists gained in and studding tenoned into sills. Corner, door, and window studs, 4 by 4 in.; other studding, rafters, and collar joists, 2 by 4 in.; floor joists, 2 by 8 in., and bridged. All of good timber, and well nailed. The frame is boarded on the inside with mill-worked boards, well nailed, and covered with felt paper, and furred off with lath, placed 16 in. from centers. The outside is covered with a good quality of 6-in. clapboards. The floors are covered with good mill-worked pine, or spruce boards, 6 in. wide. The roof is boarded with mill-worked boards, and covered with best 18-in. shingles, laid 5 in. to the weather. The windows in the lower story have four lights each, 14 by 30 in. glass; in second story, four lights each, 14 by 28 glass; fricze windows, two lights each, 14 by 16 in.; cellar windows, two lights, 14 by 14, double glazed. Cellar windows are hung with butts at top. All windows to have suitable fastenings. The front door is 2 ft. 8 in. by 7 ft., 1¾ in. thick; closet doors, 2 ft. by 6 ft. 6 in.; cellar door, 2 ft. 6 in. by 6 ft. 8 in.; other doors, 2 ft. 8 in. by 6 ft. 8 in., and 1⅜ thick, hung with 3½-in. loose pin-butts. Outside doors are provided with locks; other doors, mortice latches, all trimmed with porcelain knobs, and japanned furniture. The casings are 5-in. wide, moulded edge; first story to have band mouldings and mouldings on base; second story, bevelled casings and base; kitchen to be wainscoted, 3 ft. high. The stairway is with easy rise and tread, made substantial, with turned newel balusters and rail around, opening in chamber. The cornice is provided with suitable gutters and leaders to carry the water into the cistern. Stairs lead to the cellar, made of 2-in. plank. A cast-iron sink is set in the kitchen, inclosed with door underneath, and provided with waste pipe. A suitable pump is provided. All woodwork usually painted has two coats of best white lead and oil, as a basis, with such colors as may be chosen.

The cellar is excavated as shown in plan, fig. 3, with trenches dug below frost, and dirt levelled off. Cellar walls and foundations are of field stone properly placed, and laid in lime and sand mortar. The joints are pointed, and the cellar made 6½ feet high. A cistern is excavated 6 feet in diameter by 9 feet deep, arched over with brick with suitable man-hole and openings for inlet and outlet pipes;

the whole interior thoroughly plastered with water-lime mortar; overflow pipe laid of tile below frost. The chimney is laid of brick, starting on bottom of cellar, with all necessary openings of stove pipe provided with thimbles. The first and second stories are lathed and plastered with one good heavy coat of brown mortar; the side walls trowelled smooth and the ceilings hard-finished.

Estimate for House, 22 ft. by 26 ft. 14 ft. Posts.

2 sills,	6x8 in., 26 ft. long		20 joist,	2x8 in., 22 ft. long	
3 sills,	6x8 in., 22 ft. long		75 pieces,	2x4 in., 14 ft. long	
3 sills,	6x8 in., 10 ft. long		75 pieces,	2x4 in., 16 ft. long	
16 joist,	2x8 in., 14 ft. long		100 pieces,	2x4 in., 18 ft. long	
16 joist,	2x8 in., 12 ft. long		18 pieces,	4x4 in., 14 ft. long	

Total, 4,759 feet, @ $14.00 per M	$66.63
3,000 feet Roofing and Sheathing, @ $12.00	36.00
2,000 feet Siding, @ $18.00	36.00
2,000 feet Finishing Stuff, 1 in., best common, @ $25	50.00
500 feet Finishing Stuff, 1¼ in., @ $30.00	15.00
300 feet Finishiug Stuff, 2 in., @ $20.00	6.00
1,600 feet Flooring, @ $18.00	28.80
200 feet Wainscoting, @ $25.00	5.00
8,000 Shingles, @ $3.50	28.00
14 Doors, @ $1.75 each	24.50
12 Windows, @ $1.75 each, $21.00; 6 Freize and Cellar Windows, @ $1.00 eacb, $6.00	27.00
500 feet Mouldings, @ 2½ cts per foot	12.50
Nails, Trimmings, etc	35.00
Gutters and Leaders	10.00
Cistern, Pump, and Sink	25.00
Carpenter Work	125.00
Painting and Material	60.00
50 Perches Stone Work, @ $1.00	50.00
1,300 Bricks laid in Chimney, @ $12.00	15.60
275 yards Plastering, @ 18 cts. per yard	49.50
100 lbs. Tarred Felting, @ 5 cts	5.00
Excavating, etc	15.00
Total Cost of House	$724.43

Prizes for Plans of Barns and Other Farm Buildings.

This is a country of farms and farm buildings, and there is much to be done in the improvement of our rural architecture. It will be an important feature of the *American Agriculturist* for 1883, to publish plans and estimates of the various kinds of the most approved farm buildings. To this end we invite all of our many thousands of readers to aid in this good work. As a beginning we offer the following prizes in each class:

Frst prize (in each class), $25.
Second prize (in each class), $15.
Class I.—A general Barn, costing less than $1,000.
Class II.—A general Farm Barn, costing from $1,000 to $2,500.
Class III.—A Cattle Barn.
Class IV.—A Sheep Barn.
Class V.—A Piggery.
Class VI.—A Poultry House.
Class VII.—A Dairy House.
Class VIII.—A Root House.
Class IX.—A plan of any other Out-building.

The drawings should give the elevation and floor plans of rooms, with measurements; in short, all features of the structure so clearly as to be easily understood. The quantity, quality, and cost of material used, and expense of labor in construction when given will add to the value of any plan submitted. Each plan entered for the prizes should be marked with its class number, and a fictitious name, accompanied with a sealed envelope bearing the assumed signature, with the real address inside. The plans are to be the property of the *American Agriculturist*, and should be forwarded to the editors prior to January 1st, 1883.

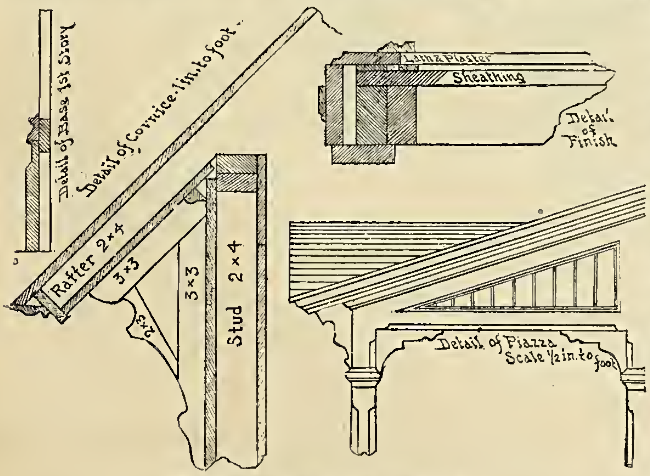


Fig. 6.—CORNICES, FRAMING, ETC.

Renew Now.

Do not wait until the last day of the year, but send your Subscription for 1883, as soon as you receive this December number, and we will have it entered in our books at once.

Prices of Farm Products.

The leading markets, which make and control prices, such as Chicago, New York, Liverpool, and London, are now so connected by telegraph, that their transactions are carried on, and they influence each other just about the same as if all the operations were taking place in a single grand central exchange building. A rise or fall of half a cent per bushel in any grain in London, or New York, or Chicago, is known and exerts an influence in each of the other places within a few minutes, excepting that owing to the difference in time, the transactions of the day are about over in Europe when they begin on this continent. At certain periods, usually a few of the closing days of each month, the settling up of options, and the effects of "corners" in grains, hog products, etc., often produce marked changes, up and down, in the current prices. With these exceptions, the rates prevailing on any day express the combined general opinion of all the leading operators, throughout almost all the chief markets of the world, as to the probable relative supply and demand, and the future course of speculation. The sellers of optional or actual grain, etc., for future delivery, look for a decline, while the buyers are sanguine of a rise, and as these opposing parties are equally interested, and are supposed to be about on a par as to their general information, the current rates on any day are the only barometer of any value to the country at large. A month ago (October 6), we wrote that there was a general feeling that the prices of wheat, corn, etc., had settled down to almost their normal level, and that future changes would be largely due to speculation. During the past thirty days there have been various ups and downs, but a comparison of the rates of wheat in Chicago, for example, shows as follows:

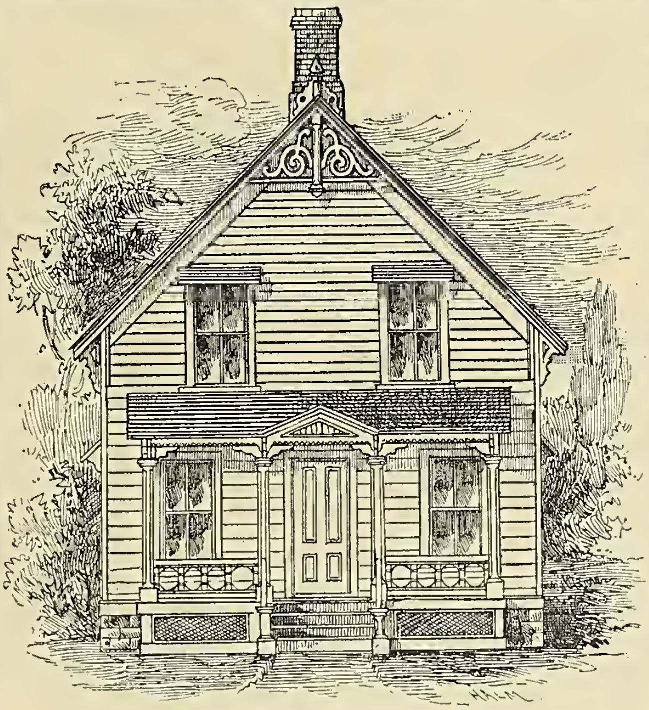


Fig. 2.—FRONT ELEVATION OF COTTAGE.

	Oct. 6	Nov. 6	Differ'ce.
November Wheat	$0.95¼	$0.92⅜	$0.02⅞
December Wheat	....	.93⅞	....
January Wheat	....	.94½	....
Year Wheat	.94⅜	.92⅜	.01⅞

That is, the present price of wheat deliverable at any time during this year, varies scarcely 2 cents per bushel from the price on October 6th, and for that deliverable in January, the price is within an eighth of a cent per bushel of "year wheat" one month ago. These figures indicate a general expectation that wheat will not vary greatly from the present prices for sometime to come, and probably not during the year, except spasmodically.

Indian Corn.—The developements of the past month indicate that the previous expectation as to the amount of corn to be marketed, was rather high. This is partly due to a poorer show in the husking out in several localities, and to too low an estimate of the amount required for the annual reserve. The bears still claim that there is corn enough, but that producers are holding it back for higher rates. There is something in this, but it does not account for all the change in price. The following figures show the variations in the Chicago market:

	Oct. 6th.	Nov. 6th.	Difference.
November Corn	62¼c.	66½c.	4¼c.
December Corn	——	62⅝	——
January Corn	——	54⅛	——
Year Corn	56¼	61½	5

That is, corn deliverable during the rest of the year, is 4@4¼c. higher than a month ago; but that deliverable in January is 2⅛c. per bushel lower than "year corn" was rated on Oct. 6th.

Hog Products have declined materially, as we indicated they would, last month. While the corn crop will be under what was expected, it is generally believed that there will be enough both of corn and of hogs to consume it, when there is sufficient time to get pork and lard made and marketed. The changes in prices at Chicago are as follows:

	Oct. 6th,	Nov. 6th.	Difference.
November Pork, bbl	$21.85	$19.02½	$2.82½
November Lard, 100 lbs	12 50	11.45	1.05
December Lard, "	——	11.02½	——
January Lard, "	——	11.02½	——

A Baker's Dozen.

Every new subscriber to the *American Agriculturist*, whose name is received before December 10th, will receive the December number of the paper free, making a round baker's dozen (or 13 months).

Every issue of the *American Agriculturist* is richly worth more than the subscription price for an entire year.

Experiments With Plants.—During the past year, Dr. Kedzie, of the Michigan Agricultural College, has made some experiments with plants, to determine the source of their nitrogen. An artificial soil, consisting of sand (previously ignited), swamp muck, and ashes, was placed in pots in which red clover, wheat, and wax beans were planted. The pots were placed in a glazed room, and supplied with distilled water. The wheat grew vigorously for a short time, and then withered, producing no heads. The beans did far better, and ripened several well-developed seeds. The clover made a complete growth, forming good sized stems, and a large number of seeds. A corresponding series of experiments was made, in which the humus or muck was deprived of all ammonia compounds, by prolonged boiling with caustic lime. In all other respects, the conditions were the same. The three kinds of plants maintained the same relations to each other, only each one was less vigorous than in the first series above mentioned.

How to Make a Cheap Fountain.

During the dry, hot summer afternoons, a fountain, be it ever so small, playing near the porch, gives a cooling and refreshing effect that is not outdone even by a flowing spring. Flowering and other plants grow luxuriantly around a fountain, and this alone is sufficient to fully compensate for its cost. Then why not have one, and contrive it now, when you have the spare time?

There are hundreds of farms upon which the required buildings are already erected, and only the necessary fixtures are needed

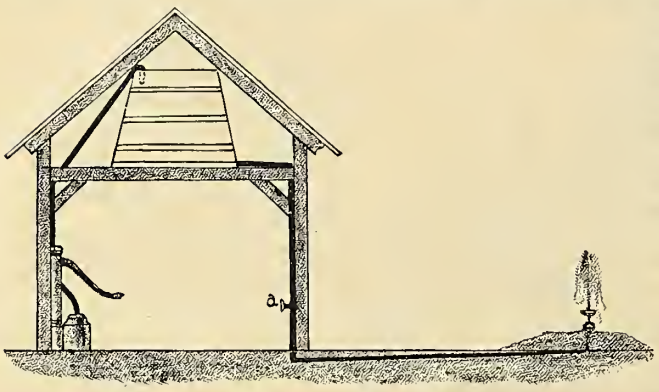


Fig. 1.—SECTION OF BUILDING WITH TANK AND PIPE.

to make everything complete. Figure 1 shows how the tank may be placed in a milk-house, smoke-house, or other building. It may be made square or oblong, of two-inch pine plank, and should be painted inside and out, or pitched like a boat. It may be filled from the well with an ordinary force pump, the water being elevated through hose or lead pipe. From the tank the water is conveyed to the fountain through iron or lead pipe—iron is best. A screw plug should be inserted at *a*, to stop the flow of water when necessary. The tank should be large enough to hold water for a week's flow. It need not run all the time; only mornings, afternoons, or evenings—whenever it is beautiful to look at, or is needed for the plants. Figure 2 shows how the fountain is constructed. It is made of brick, laid in cement, and then cemented smooth on the inside. The pipe through which the water is thrown may be simply a pointed piece of composition pipe, reaching just above the water, or a fancy iron or enamelled affair, two to four feet high. It should have a screw top, to regulate the size of the jet. A jet about the size of a knitting-needle will be quite sufficient, except in the event of lawn parties or other extra occasions, when something brilliant is desired. A tile is laid all around the base of the brick-work, as seen in fig. 2, and off to some convenient outlet. If desired, the overflow may be conveyed through another iron pipe to the pig-pens, or wherever water is needed. The bottom of the "pool" may be covered with white gravel, one or two large stones being added, with a few sun-fish, and groups of ferns, callas, pansies, and a *Caladium esculentum* set on the border. The plants will make an extraordinarily large growth, and should not be planted too closely together. If the pump is a good one, it will require less time and trouble to fill the tank for this fountain, than to carry water and thoroughly sprinkle one ordinary flower bed. In the fall the tank is emptied, the fountain dried, cleaned out, filled with straw, and a light cover to shed rain should be placed over all. This must be done, to prevent the frost from bursting the brick-work, etc.

F. G.

Breeds and Crosses in Poultry.

There are many flocks of highly profitable fowls, as egg producers, so mixed up that it is almost impossible to tell the foundation stock, and many fine-looking flocks of thoroughbred fowls do not pay expenses. The fact remains, however, that unprofitableness is not so much the fault of the birds as of their owner. Mere breed makes much less difference than many suppose, especially in the *weight* of eggs laid by each hen during an entire year. The Leghorn fowls, the White variety in particular, are noted as great layers, and have well earned this reputation. Some prefer the Brown, considering it handsomer, but this is a mere matter of taste. We believe the Leghorns will, under similar treatment, produce more eggs than any breed, or combination of breeds, now known, taking the year together. They may not be so large, or weigh as much, yet, as eggs sell by the dozen, there are more dozens in the same weight to sell than with eggs of the Brahmas and Cochins.

One of the best crosses for eggs, the offspring being superior winter layers, is obtained by crossing Light Brahmas with Game fowls. These crossed with the common hens of the barnyard stock, will generally produce fine layers. The hens should be carefully watched, and

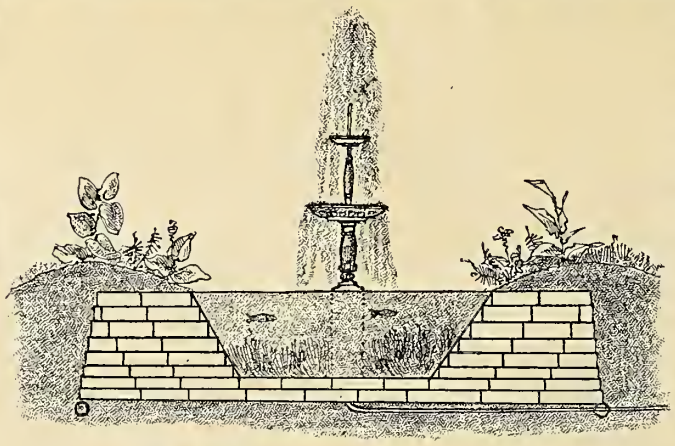


Fig. 2.—CROSS-SECTION OF FOUNTAIN.

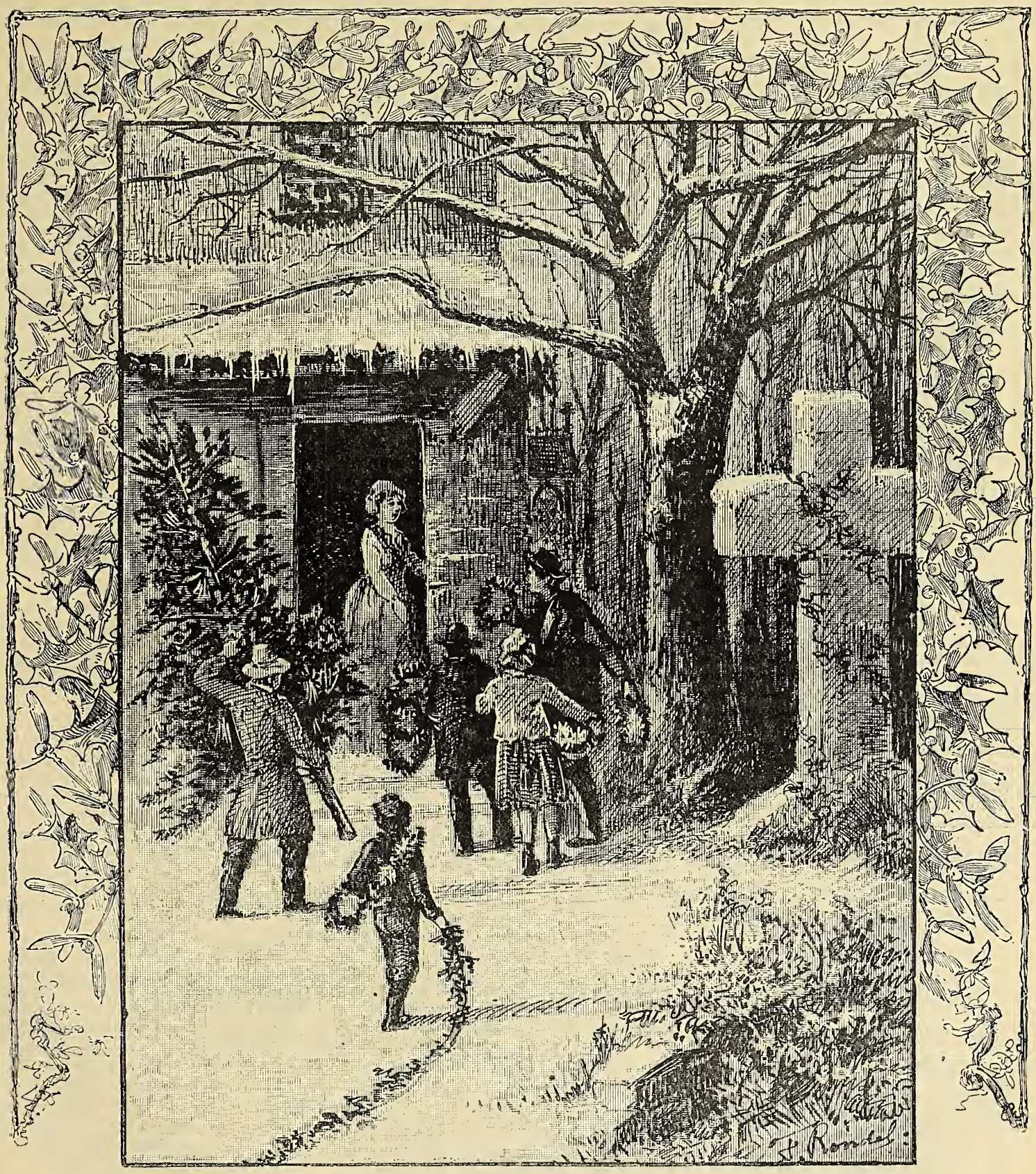
if they frequently fail to do their duty, replace them with better ones. Hatch very early, so as to get the pullets to laying in the fall and winter, and keep no hens over two years old.

A superior food for laying fowls is whole wheat or good wheat screenings and cracked wheat. When bought, it pays best to get sound wheat, as all of it is suitable for food. A second, or even a good third quality of wheat should be purchased, the amount fed being governed greatly by the condition of the birds and the severity of the weather. A little experience and care will soon determine this point. The hens must not, however, be confined solely to this diet, but have occasional feed of meat (cooked and chopped fine), scalded corn-meal, buckweat, whether they have full liberty or not. Some kind of green food should be given daily, if the hens cannot gather what they need to keep healthy. Regularity in feeding and cleanliness must also be observed strictly and constantly. D. Z. E.

Sand as a Safeguard against Melon-Bugs.

In a change of base, last spring, we left behind our frames covered with mosquito netting, to cover the melon and squash vines. The seeds were planted at the usual time, and we never had a better stand of plants. It looked a little like Paradise to see the Marblehead squashes growing for three weeks, without the sign of a bug around them, every leaf perfect. The bugs struck us about the 20th of June, the three species that infest them all at once, and commenced their ravages. A successful grower of watermelons suggested sand as a remedy. A load of fine sand was brought and immediately applied, about a peck to each hill, around the young plants, an inch deep or more. The bugs did not all leave at once, but the nuisance was so far abated, that the young plants were saved, with the usual application of wood-ashes upon the leaves. The philosophy of the action of the sand, seems to be this; the instinct of the injurious bugs leads them to burrow in the earth, immediately around the stems and on them, especially the common Squash-bug (*Coreus tristis,*) well known by its strong odor. They lay their eggs in patches upon the leaves, where they are easily crushed between thumb and finger, but their place of retreat is at the base of the stems. These bugs prey upon the stems, as well as the leaves, and later in the season, if left to themselves, they will cut off the stems, and the vines will suddenly die, perhaps with half grown fruit upon them. The sand is very slippery, and does not favor their burrowing, and they seem to quit in disgust. On examining the squash stems, about the middle of July, when they were thinned out to four plants in a hill, we found none of the stems marred by these insects, and not one of these bugs was visible. A few of the Striped-bugs (*Galeruca vittata,*) and the Speckled-bug, lingered, but not enough to check the luxuriant growth of the squashes, watermelons, and nutmeg melons, promoted by the abundant moisture of late and oft-repeated rains and continued warmth. The sand, in this case, has worked admirably.

What Crops to Raise.—In deciding upon the crops to be grown it is necessary to consider their respective market values, and grow those most in demand. If to be carried far, it is economy to condense the products by making more meat, wool, etc., and less grain. The peculiarities of the soil must be considered, and the kinds of crops selected that will grow to the best advantage. The kind and number of farm animals to be provided for must not be overlooked in the system. There must be an adjustment of the crops to a systematic rotation, that there may be saving in labor, and an opportunity for thorough tillage. This implies that each farmer must determine for himself the crops to raise.



THE COUNTRY CHURCH.

Designed by Fred. Rondel, Sr., and Engraved for the American Agriculturist.

We ring the bells and we raise the strain,
We hang up garlands everywhere
And bid the tapers twinkle fair,
And feast and frolic—and then we go
Back to the same old lives again.

SUSAN COOLIDGE.

I heard the bells on Christmas Day
Their old, familiar carols play,
And wild and sweet
The words repeat
Of peace on earth, good-will to men!

LONGFELLOW.

Prevent Posts from Splitting.

BY L. D. SNOOK, YATES CO., N. Y.

When driving posts, unless one is very careful, many of them will split at the top, and be rendered less durable or even worthless. This damage and loss can be avoided in a great measure by proper preparation of the posts before they are driven. The tops of sawed posts should have the sides cut off as in fig 1; or simply cut off each corner, as in fig. 2, while a round post should be shaped as in fig. 3. The part of the post removed need not be more than half an inch in thickness, but when the corners only are cut away, the chip should be thicker. In driving it is

Fig. 1.

Fig. 3.

Fig. 2.

very important to strike the post squarely on the top, and not at one corner or side.

Usually, after the posts are all driven, they are sawed off on top, and in most soils at the North the frosts heave them more or less each season, and they need to be driven down to the usual depth. To do this with but little injury to the post, the device shown in fig. 4 should be used. It is simply a piece of tough hard-wood scantling, *e*, 18 inches in length, with tapering ends. It should be provided with a handle, *h*, 3 feet in length, of quite small size, and, if possible, of green timber. In using it, let one person (a boy will do,) lay the bit of scantling on top of the post to be re-driven, when, with the bee-

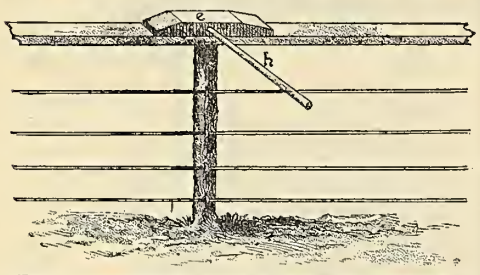


Fig. 4.—SCANTLING WITH HANDLE IN POSITION.

tle or sledge, the scantling, instead of the post, is struck, thus preventing the splitting of the post. When the top of a fence is surmounted by a stringer, as in the engraving, the effect of the blow is distributed over a large space, and both stringer and post escape injury, which would not be the case if driven in the usual manner. The attendant should keep hold of the handle, *h*, while the posts are being driven, and move the scantling from post to post as required.

Cauliflowers.—This most delicate and delicious vegetable has never been, within our recollection, so abundant or so fine as during this year. Enormous and beautifully-grown heads have sold at little above the price of cabbages. The growers have adopted a method which may be useful to market gardeners elsewhere. The pure white surface is readily soiled by dust, etc., and soon turns dark colored by exposure. This season the cauliflowers come to market, each having the "flower" or head covered with white paper, kept in place by tucking its edges under the remains of the leaves which have been trimmed off. The excellent condition in which they reach the consumer, quite warrants the slight extra trouble.

Keeping Farm Accounts.

BY EBEN E. REXFORD.

In order to know what crops are paying best, it is necessary that a farmer should keep an account with each field on his farm. If he were to have a general account, he could tell at the year's end whether he had made or lost, but precisely where the gain or loss came from, he could not know with any degree of certainty. He might lose money on corn, while the profit realized from wheat would be sufficient to over-balance this loss. If he keeps a record with the corn-field, and another with the wheat-field, he can tell just what the loss or gain from each field is.

The keeping of field accounts necessitates the plotting of the farm, with a number for each field. This should be done in advance of the work of spring. The accounts, instead of being kept between the farmer and another person, will be between himself and field No. 1, or 2, or 3, etc. Two small blank-books are needed in which to preserve the record. One, the ordinary day-book of the merchant, in which is entered the transactions for the day. The other, a ledger, has each page ruled for debit and credit. On the left-hand side will be entered all expenses which the cultivation of the field and the harvesting and sale of the crop occasions. The right-hand side is for the receipts from the sale of the crops. At the head of each ledger page put the number of the field, the record of which is kept on that page.

For example, begin with field No. 1. This, it may be supposed, is planted to corn. If work was begun on this field by plowing, April 20th, the day-book entry will be:

April 20th.....Field No. 1, DR.
To one day's work, man and team.....$2.50.

Each day the work done on that field will be charged to it. This day-book account should be attended to every day; if neglected, these important items will be forgotten. Perhaps the first work done on this field will be manuring it. If so, the entry in the day-book of the first day's work would stand like this:

April 20th..... Field No. 1, DR.
To 10 loads of manure, 50c. each.....$5.00.
To work of man and team. .... 2.50.

After that would come plowing, harrowing, marking, planting, cost of seed, etc., and then the items of expense for cultivating and harvesting, as performed through the season. Bear in mind that every item of expense belonging to the field must be charged to it.

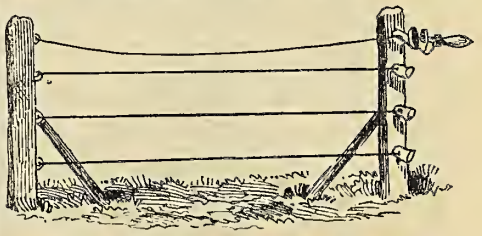
If anything is sold from the field, or used by the farmer, it must be credited to the field. For instance, corn may be used for eating. Make an entry in the day-book thus:

August 3d.....Field No. 1, CR.
By green corn..... ....25c.

The above will give an idea of what the day-book entries should be. It is a sort of diary of every day's work, and all expenses connected therewith. Keep this diary in such a way that you know just what field the work went to, and what has been received from that field. Every thing going to the field makes it a debtor. Every thing coming from the field makes the farmer the debtor. Thought of in this way, the keeping of the day-book is a very simple thing.

A Wire Tightener.

Mr. "H. H.," Bordentown, N. J., sends us a sketch and description of a cheap device for tightening the wires of grape trellises and fences. It is made by simply boring inch holes for each wire, in the side of the well-braced end posts, and placing in them pieces of wood 12 inches long, as shown in the engraving. Wagon spokes are very good, if one has them. These pieces should have a small hole bored through them to receive the ends of the wires. By using a monkey-wrench, the wires may be stretched to any desired tightness. When they are drawn tight enough, the spoke is driven into the

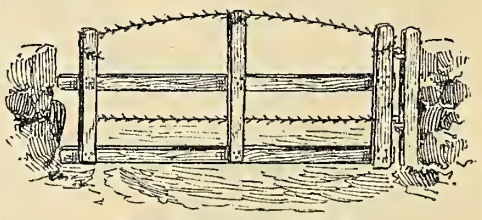


METHOD OF TIGHTENING TRELLISES.

post to prevent its turning and letting the wire slip back. When the wires become loose, they may be readily tightened by again turning the "spokes," as shown in the engraving.

A Half Wire Gate.

"P. J. S.," of Caledonia, Minn, sends us a sketch of a "half wire" gate, and writes: This makes a light gate, that a child can handle, which does not sag or get out of repair, and is cattle proof. The materials are two boards 12 or 14 feet long, three uprights, the end-pieces 3½ feet and the center 4½ feet; two strands of barbed wire, one between the boards, and the other at the top of the uprights. It is hung the same as the



BARBED WIRE IN A GATE.

common "slide and swing" form of gate. One in my garden fence has for three years bid defiance to the village cows of the street, usually so skilled in gate opening.

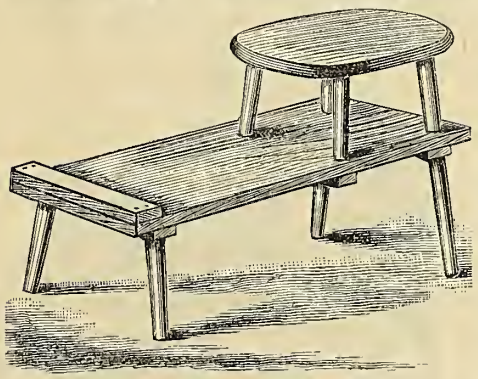
Making Sorghum Sugar.

Much progress has recently been made in the separation and crystalization of the sugar of the Sorghum plant. The following are the principal points to be observed: the juice from the mill is placed in copper vessels and heated to 175° F., when successive quantities of milk of lime are added, and stirred in until litmus paper is tinged purple. The juice is boiled and the thick scum removed until the liquid becomes clear. (It is an important matter of experience to know the

amount of lime to be added.) The clear juice is drawn from the defecator into the evaporating pan, when sulphuric acid is cautiously added, and stirred in until blue litmus paper, dipped into it, is reddened. The evaporation is continued until the desired density is reached, when the syrup is placed in a warm room to crystalize. Professor Henry, of Wisconsin University, who has made valuable experiments with Amber cane, gives the following preliminary rules: "Do not cut the cane until the seed begins to harden. Do not allow the cane to stand stripped in the field, but work it up as soon as possible after being cut. Defecate the juice as soon as possible after leaving the mill."

A "Two-Story" Milking Stool.

A convenient milking stool is shown in the accompanying engraving. The long board, forming the "first floor," rests upon four stout legs. The two rear legs pass up



A GOOD MILKING STOOL.

to the short board above, that forms the seat. A cleat is placed on the front edge of the long board, to keep the pail from sliding off of the stool when the person is milking.

Posts Lifted by Frost.

The curious expansion of water in freezing, and of soils filled with water, has a telling effect upon fence posts standing in damp ground. The top soil around a fence post, if dry, or only slightly moist, does not affect the post during winter. But if the particles of soil are saturated with water, on freezing the whole expands an eighth, so that, when frozen eight inches deep, the post is lifted an inch out of the lower unfrozen soil. If the frost penetrates sixteen inches, the post rises two inches. When the frost leaves, and the surface soil sinks back, the post remains two inches out of the ground. A few freezings

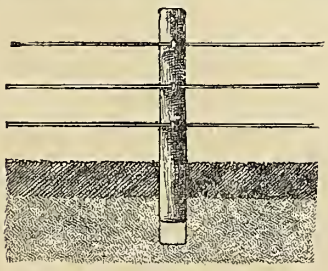
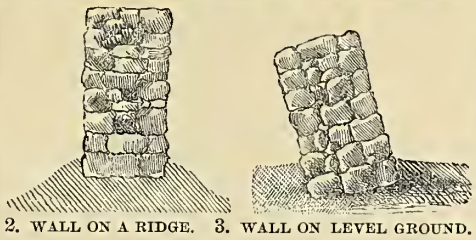


Fig. 1.—POST LIFTED BY FROST.

of the surface will thus inevitably throw the post out so far as to render it useless, unless it is driven down every spring before the open space left at its bottom is filled by soil washed in. For this reason it is advisable to make the extreme lower ends of fence and other posts a little tapering, or at least to clip off the bottom corners so that they can be driven down more easily when lifted. We will say now in advance, that all fence and other



2. WALL ON A RIDGE. 3. WALL ON LEVEL GROUND.

posts should be examined early every spring, and those at all lifted be driven back with a beetle or sledge hammer. A stitch in time will save nine, here. On naturally dry, or drained land, the above trouble will not be experienced, except at places where water flows through them from a higher to a lower level, thus keeping them wet, or very damp.

Destroying Stone Fence Walls.

When these stand on water-saturated soil, the expansion by cold, if uniform on both sides, does not affect them. But almost invariably, especially if running in any direction but north and south, and often then, the soil under them will be more frozen or sooner thawed on one side than on the other, and thus they will be thrown out of perpendicular, and more or less disturbed. Only four inches of frozen wet ground under one side of a stone wall, and none under the other, will lift the frozen side half an inch, or enough to tilt five inches to one side the top of a wall five feet high and two feet thick at the bottom—enough to greatly disturb it, and ultimately throw it down. A wall set down two or three feet deep in the ground will be similarly affected, if water stands around its base. There are two remedies. One is to run a drain under or near the wall, deep enough to carry off all standing water about it, below the freezing point. The other is, to raise the earth into a ridge before the wall is built, high enough to have it always dry. This is readily done by successive plowings, turning the furrows to the center of where the wall is to stand. The saving of foundation stone will far more than cover the cost of raising the ridge; and the fence will not need to be so high if standing on such a ridge, as animals will not jump it so well when they must spring from ground rising in front of them.

Farmers and their Health.

By "farmers" we include, of course, their wives and children, and we have often thought, with the general lack of precautions for preserving health, what wonderful constitutions we have inherited. Were it not that we have had a great store of vigor from our ancestors to draw upon, we should have been long ago a nation of invalids. But as one can not always draw upon a bank account without adding to his deposits, so, sooner or later, if we continue to violate all the laws of health, our drafts will be met with—"no funds." The farmer, of all men, needs health, and farmers, as a rule, are the most healthy of all people, and this in spite of a general neglect of the sanitary laws. If we were to say that we proposed to make some "Hygienic Suggestions," they would probably be passed by. So we give some suggestions about keeping well.—One of the general rules given for every one, in all climates, is to take a daily bath, or, at least, a bath once in every 48 hours. A daily bath, as generally understood, is impossible to most farmers; but a pail of water and a large towel is within reach of every farmer and every one else. Wet one end of the towel, and go over the whole body, and rub dry with the other end. If two towels can be afforded, all the better, but a large one, properly used, will answer. The comfort of a bath of this kind to the farmer after a day's work in the field, when his skin is covered with dust, has only to be experienced to make it a custom. The caution is: bathe so quickly, and rub dry so briskly, as not to get at all chilly.

On going to bed, change the clothes, and if those taken off are to be worn the next day, turn them so that they may air and dry thoroughly.—In eating, especially in warm weather, "go slow." Do not come in, hot from work, and at once sit down at the table, but take time to cool off, and at meals, eat slowly. Many look upon the time spent at meals as wasted, while it is really of the greatest importance. Eat slowly, and chew well. If you can prolong the time at meals by pleasant conversation, do so. Do not be in a hurry to resume work after meals in hot weather. Take a long nooning. Better spirits, and increased vigor and strength, will far more than make up the time taken to rest.

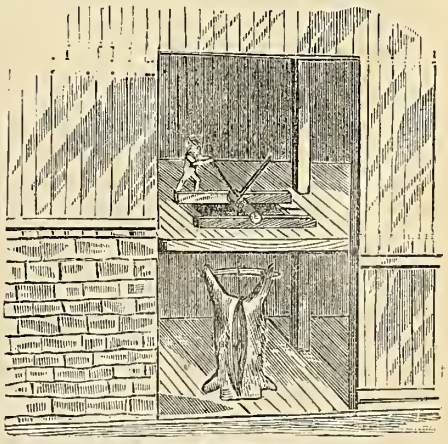
A general fault of our sleeping rooms is lack of ventilation. One reason for this is the attempt to keep out flies and mosquitoes, by closing the rooms during the day. Frames upon which wire-cloth, or the cheaper mosquito netting is stretched, will keep out insects and allow of needed ventilation.

Farmers who work all day, are not often troubled with sleeplessness, insomnia, as it is called; yet it is in some cases a disease, and the more fatigued one may be, the less he is inclined to sleep. A brisk walk before bedtime, and a sponging and rubbing of the whole body, with a wet towel around the head, will often break up the very unpleasant habit.

Farmers are very apt to neglect their teeth. Every one should have a tooth-brush, not too hard, and brush the teeth, using water freely, on going to bed and again on rising.

Hoisting Beef.

The engraving herewith given illustrates a method of hoisting beef, sent us by a subscriber. It consists of a log-roller fitted in two bed-pieces, and provided with levers. The "windlass" is placed over a

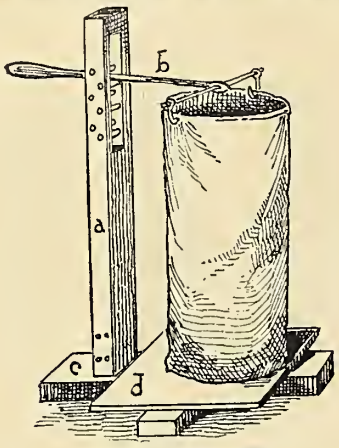


A BEEF HOISTER.

trap-doorway in the floor, and the beef is raised as seen in the above illustration.

A Home-Made Bag-Holder.

Mr. "J. S. S.," Brighton, Ontario, sends us a sketch and description of a bag-holder, and "one of the most useful articles a man can have in his barn." It consists of a post, *a*, 2 by 4 inches, and 5 feet long, with six ½-inch holes near the upper end, as shown in the engraving. The bar, *b*, passes through a mortise and over the pin nearest the bag, and under the other pin. This bar can be moved up or down, to suit the length of the bag. The post, *a*, sets in a bed-piece, *c*, 2 by 3 inches and 2 feet long. A board, *d*, 18 inches



A HANDY BAG-HOLDER.

square, fastened upon the bed-piece, furnishes the necessary rest for the bag. The mouth of the bag is held open by means of hooks placed on the ends of the cross-bar, with another beneath the main bar.

An Interesting Exception.

There is a noteworthy exception to a general law of Nature, easily understood by all, a knowledge of which is of much practical utility, particularly at this season. As a rule, solid, liquid and gaseous substances are expanded by heat and contracted by cold, but there are a few remarkable exceptions, the most important of which is water at a certain temperature. Fill a cup with water at any temperature between 40° and 200° Fahrenheit, and a few degrees of heat added will cause it to expand and overflow. If filled at any temperature, say between 45° and the boiling point (212°), and then cooled, the cup will not be full, but the water will grow less and less in bulk until the cold reaches about 39½°, when the water will again begin to expand and increase in bulk with every degree of temperature lost. When it becomes solid at 32°, the ice will occupy about one-eighth more space than the water did at 39½°, or at only 7½° above. The cause of this expansion is supposed to be, that below 39° ice crystals begin to form, and these arrange themselves across each other, so to speak, and thus occupy more space. A lump of sugar or marble will occupy more space when broken into small pieces. This is

A Most Important Provision of Nature

in several respects. For example, if water contracted at low temperatures into smaller space, it would become heavier. Then the ice, as fast as formed, would sink to the bottom of ponds, lakes, and rivers, and they would soon become a solid mass of ice, which would hardly thaw out during the entire spring, and not in summer even if the water were many feet in depth. Now, when the ice forms, being lighter than water because of its expansion, it rises to the surface; and as ice is a non-conductor of heat, it forms a protection to the water below, keeping in its heat, and so we have but a few inches, or at most two or three feet of ice formed, which soon melts when warm weather returns.

An Immense Force.

We can not tell why, but we know that when water changes into ice, it expands with a power greater even than that of gunpowder or dynamite. A single inch of water confined in the center of a large cannon ball would, on freezing, expand so as to burst it asunder, if the particles of iron around the water did not condense enough to make room for the expanding ice. Water freezing in the cracks and fissures of great rocks often bursts them into pieces. Indeed, all our soils were probably once solid rocks. These were broken by ice and the rending of volcanic action. The moist surfaces of the fragments are continually being chipped off by alternate expansion and contraction of heat and cold, and especially by the expansion of the freezing moisture. This action, with the aid of the atmosphere, is continually setting at liberty potash and other elements of plant food, found in the composition of rocks, stones, pebbles, and sand particles, which are merely rocks or stones of very small size. Examine the smallest bit of sand under the microscope, and it will be seen to be only a diminutive rock. The same is true of all the fine particles of soils.

Making Frost Enrich the Soil.

In a frozen, compact, wet soil, the icy layer formed acts as a non-conductor of heat, preventing its escape; and such soils do not freeze and thaw deeply, and less new plant food is supplied. If before it freezes solid we plow or spade the ground into a loose condition, the frost will penetrate far deeper, and the soil be richer in plant food for the next summer's crop. Deep dead furrows or drains made in wet fields of winter wheat, rye, and grass, have a like beneficial effect. But

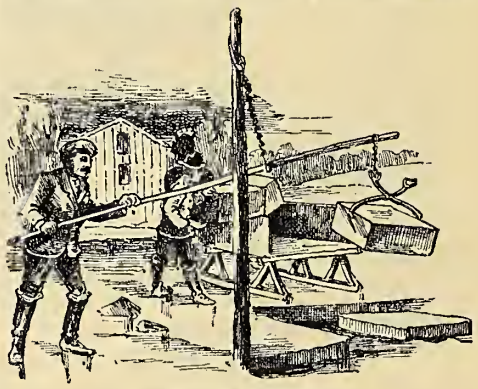
More Important Still

is another benefit of removing all standing water from around plants and roots remaining in the ground during freezing weather. While, as stated above, most solid substances are contracted by cold, a soil saturated with water expands the same as water itself. The greatest cold will not kill the roots of hardy crops like wheat, rye, and grass, but the expansion of the wet soil one-eighth of its bulk rends and tears their roots. Two or three alternate freezings and thawings of the ground, if wet, will do far more harm to winter crops than the longest, severest steady winter ever known. The important lesson taught by this is: be sure to clear out the dead furrows and their outlets now, and again early in spring, so as to drain off all standing water to a point below the main roots of the plants. It also shows one great benefit of draining all cultivated land which holds water during winter and spring.

Rubber Garments.—It is surprising how great a prejudice exists among many farmers to the use of rubber garments. Boots are in common use now-a-days for wet and thawy weather, but it is looked upon as effeminate to protect one's shoulders and legs with the same material. Many a man, with a poor constitution, has succumbed to the effects of wet and exposure, who might be now living, well and happy, if he had worn an India rubber over-coat or poncho. The last named article is simply a rubber blanket with a hole in the center to put one's head through. In many respects it is better protection then the over coat, for in a hard rain the water runs off from the corners, and for horseback riding, it is much superior.

The Loading of Ice.

Mr. "C. G. T.," Dutchess Co., N. Y., sends us a sketch of a method of loading ice, here illustrated, and writes: Whenever ice must be hauled on sleds, the following method of loading will save a great deal of heavy lifting. A pole of sufficient length to reach the bottom of the pond is firmly set through a hole cut in the ice. At a suitable hight, a chain with a loop at the end is fastened; through this loop another pole is passed,



LOADING ICE EASILY.

which acts as a lever. At one end of this lever the ice-tongs are attached with a rope or chain. A canal is cut, the ice blocks floated up to it, when they may be hoisted from the water directly into the sled.

Work in the Woods.

Formerly it was the American farmer's pride to possess great skill with the axe. The lamented Lincoln won fame as a wood-chopper and rail-splitter. Horace Greeley loved his axe, and even in the latest years of his busy life retained in good measure the skill he had in his boyhood, and his ringing blows waked the echoes of Chappaqua as he toiled for health and pleasure. The woods at this season invite the farmer. The sooner the wood is cut after sap ceases to flow in autumn, the sounder, more elastic, and durable will be the timber. The same causes make it more solid, dry, and valuable as fuel. A good farmer can ill afford to send his men into his timber lot to cut at their own discretion. He will almost always find —even if he marks every tree to be cut— that with the recklessness of irresponsibility, some wrong trees will come down; trees will be felled so as to lodge in others, which must be cut too, or so as to bring young trees, which should stand, with them in their fall. Trees will be cut with tall stumps, or so as to have long splinters drawn out from the butt, spoiling the lower log for four or five feet perhaps. Most of these things can be avoided if the farmer accompanies his men, and directs and leads the work. There

is still a good demand for white-oak at the North, and live-oak at the South, for ship-timber. "Knees" are hewed out of the butts, the crook running into the root, or out into the branches Timber four to twelve inches square, having a distinct bend, is in demand in the ship-yards at paying prices.

Law for Farmers.

BY HENRY A. HAIGH, ESQ., DETROIT, MICH.

What Goes With the Farm.*

When a farm is bought or sold, questions often arise as to what goes with it, and disputes may often be avoided if farmers know just what their farm deeds include. In brief, where no reservations are made in the deed, the conveyance includes the land, the buildings upon it, and all such chattels or articles as have become so attached or fixed to the soil or to the buildings, as become what is known in law as "Fixtures."

The land, the buildings, and the fixtures, then, constitute the farm. The first two are easily understood—the land up to its boundaries is included in the deed. If the boundary is a street, or fresh water stream, or inland lake or pond, it extends generally to the middle of these, unless otherwise specifically stated. The buildings are all included, no matter how they rest upon the ground; and if any one of them has been blown or torn down, and its materials stored away for future use upon the farm, such material is also included. If it is found that any building belongs to some one else, with the right to remove it, such fact constitutes a breach of covenant, if not stated.

What constitutes a "Fixture" depends largely on the intention of the owner in putting it there, and also upon the manner in which it is affixed. Anything so fixed to the soil or the buildings that it cannot be removed without injury, nearly always goes with the farm; and anything of a permanent nature, fitted for permanent use, and annexed thereto by the owner with that intention, generally goes with the land, though it might be severed without any injury, as the following examples will illustrate: All fences upon the farm go with it, but not fencing materials, as rails, etc., if bought elsewhere and piled upon the farm, and not yet built into a fence; they have never yet been "annexed." But rails cut from timber standing on the farm and piled up for future use, go with it; their original annexation is not severed by being changed from standing trees to rails. If, however, they were cut with the intention of using them elsewhere than on the farm, they would then be personal property, and would not pass. The bare intention in the mind of the owner in this instance makes the difference between real estate and personal property. Hop poles, if they have been once used upon the farm, are regarded as a part of it, though at the time of sale they are stored away for future use. Loose scaffold-poles, however, laid across the beams of a barn, have been held not to be a part of the realty. Standing trees, of course, are part of the farm; so are trees cut or blown down, if left where they fall, but not if corded up for sale; the wood has then become personal property.

* The professional reader will find the following cases of interest, as holding the principles here set forth: 62 Penn. St., 33; 35 Conn., 94; 48 N. Y., 282; 9 E. C. Green, 260; 42 Vt., 146; 20 Wend., 636; 1 Ohio St., 514; 2 Smith's L. C., 5 Am. ed., 252; 40 Vt., 233; 43 N. H., 306; 2 Hill, 142; 16 Ill., 480; 1 Kernan, 123; 54 Me., 309; 13 Grey, 93; 43 Vt., 95; 7 Watts, 387; 41 N. H., 505; 19 Conn., 154; 75 Ill., 385; 7 Mass., 432: 102 Mass., 517; 99 Mass., 457; 19 Pick., 314; 36 Conn., 86; 12 N. Y., 170.

A Safety Egg-Carrier.

BY B. J. GOODWIN, BREMER CO., IOWA.

We live 11 miles from our market town, often have to carry eggs in a lumber wagon, and have lost many by breaking. To avoid this loss, I devised the following plan of setting the egg-box on springs. In figure 1, *a* represents the bottom-board of the spring-box, near the edges of which are fastened 6 wire-coil springs or bed-springs. At *b*, is represented a hole made in the board to receive the lower end of the spring, about ½ inch of which is bent down for that purpose. Small staples are driven into the board, to hold the springs in place. Scraps of leather or tin might be tacked or screwed down, instead of using staples; *d*, *d*, are leather straps, an inch or more wide, and long enough to reach from the bottom-board, where each one is fastened by two screws, to the egg-box, after being placed on the springs. Figure 2 represents the side and end boards, which, when placed over the bottom-board holding the springs, forms the spring-box; screws fasten the side and end boards to the bottom-board of the spring-box, pieces of tin being nailed around the corners of the box, to give it proper strength, the nails being clinched on the inside.

After securing the springs and straps to the bottom-board, the egg-box should be

Fig. 1.—BOTTOM BOARD OF SPRING BOX.

placed on the springs, and the points of the springs placed in holes previously made in the bottom of the egg-box to receive them. Now put a sufficient weight in the egg-box to settle it down firmly on the springs, and fasten the upper ends of the straps to the

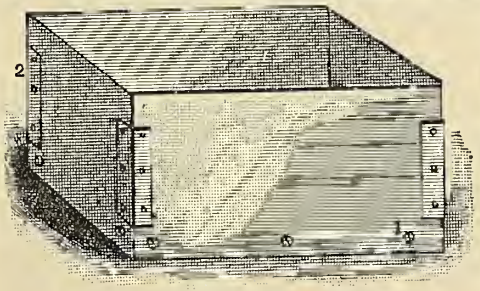


Fig. 2.—FRAME FOR HOLDING EGG BOX.

box, being careful to have the box set level. Having done this, take the part, fig. 2, and put it down over the egg-box to its place, and make it fast to the bottom board of the spring-box with heavy screws. The object of the bottom, fig. 2, is to keep the springs from being strained to one side in going over rough ground. It should be made ¼ inch or so larger than the egg-box, that the latter may have the benefit of the springs. Our former custom was to put a feeding of hay in the wagon-box, about midway from one end to the other, place the egg-box on the hay, and drive carefully over the rough places. But more or less eggs would be broken, the best we could do, whether they were packed in bran or put in paper "boxes"

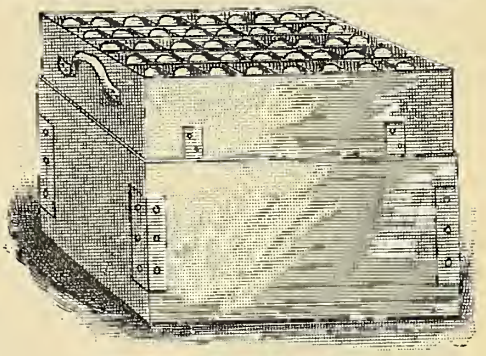


Fig. 3.—EGG BOX COMPLETE.

or cases. After setting the box on springs as described, I place it on the bottom boards of the wagon-box, with one end directly over the forward axle of the wagon, and can drive to town, without special care in passing the rough places upon the road, and seldom break an egg.

Administering Drugs to Dogs and Pigs.

The following is the safest method of giving medicine to Dogs in a liquid form: tie the mouth, and have him held firmly. Then draw out the cheek, which acts as a funnel, and pour down the fluid. If he clenches the teeth so as to exclude the liquid, put a bit of wood between them. In giving a bolus or ball, one person should hold the dog between his knees, the hinder part resting on the floor. Another person then forces open the mouth by pressing the forefinger and thumb of the left hand upon the lips of the upper jaw, and with the right thrusts the ball far enough back toward the animal's gullet to ensure its ready passage to the stomach.

To prevent disgust and sickness, nauseous medicines should be enveloped in thin paper or in a thin flour wafer. Whenever possible, the necessary medicine should be introduced into the food of the Pig. If this is impossible, small pigs may be drenched by seizing them by both ears, placing them between the legs, and lifting them a few inches from the ground. The medicine, previously mixed, is gradually poured into the mouth from an iron spoon by another person, the elevation of the head causing the mixture to pass backwards, and thus be swallowed. For large pigs, the operator can hold the head firmly between his knees, while an assistant secures the hinder portions. The first, lifting the head a little, turns it somewhat to the right, separates the lips on the right side, when he can pour the contents of the horn or bottle into the angle of the mouth. Or again, the animal may be secured by a running noose to a post, and then be drenched by a single person.

"Spavin Cure."—A spavin is a growth of bone upon the hock joint of a horse. After the growth has become solid, and is a true spavin, it can not be cured, but

only relieved. Spavins are often very sensitive, and cause great pain. They cause the horse to tread upon the toe of the foot for relief; this changes the growth of the foot, and of the muscles and tendons of the leg more or less. The hoof grows high at the heel, and contracts. Now this condition of things can not be cured in the ordinary sense of the word, and any seller of a liniment or other article who claims to cure spavin, is a humbug. Nevertheless, the liniment may be valuable as affording relief to the horse, either by benumbing the muscles, or by allaying the inflammation and irritability of the parts, so that the animal may cease to go lame for a time, if not permanently.

A Few Nesting Boxes.

Many farmers and other persons who keep poultry fail to provide nests for their hens, and then grumble because they seek their nests about and under the farm buildings, in fence corners, under brush heaps, and various out-of-the-way places. If clean boxes, provided with straw or other nesting material, had been put up at convenient points the hens would have used them, and would not "steal" their nests. A very good size for a nest-box is one foot square, and nine or ten inches in hight. They should be well made, and if planed and painted all the better. Apply kerosene freely to the inside, where the boards are nailed together. This should be applied early in spring and again about the first of July; it will at once kill hen lice, and also prevent their getting a foothold about the boxes.

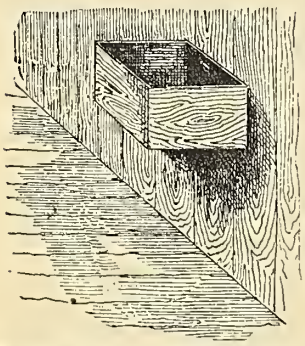


Fig. 1.—A HANGING NESTING BOX.

Nesting boxes should never be permanently attached to buildings, but placed upon

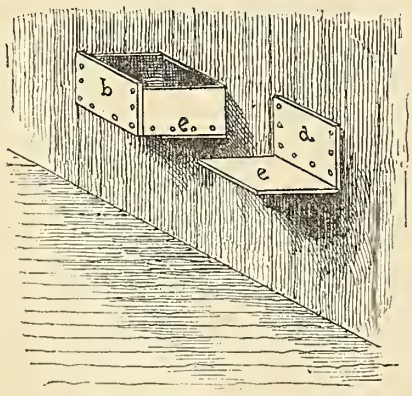


Fig. 2.—SLIDING BOXES.

a floor, or hung to the side of a hennery or other convenient place to both fowls and attendant. An excellent plan for thus securing the boxes is shown in fig. 1. At one side of the box, near the top, is bored an inch hole, through which loosely passes a wooden or iron pin, driven in the side of the building. Considerable annoyance is often experienced by laying hens interfering with those that are setting; often a whole setting of eggs are broken, or are so disturbed that they will not hatch. This trouble is readily avoided by those who have a poultry house with two rooms, by the use of sliding boxes, as shown in fig. 2. A hole is cut through the partition about two feet from the floor,

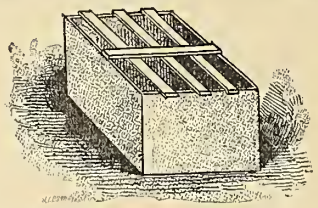


Fig. 3.—A MOVING BOX.

to the bottom of which is firmly nailed a shelf or platform, *e*, *e*, about two feet in length and nearly one foot in width. Upon this board rests the nesting boxes, made so that they can be easily slid back and forth. The ends are made one inch higher than the sides that they may not slide clear through or fall down. At *b* one box is shown pulled out in the room, while at *a* the box is seen pushed through into the adjoining room. As fast as hens manifest a desire to set they may be furnished with eggs and put in the nest room, in which laying fowls are not allowed. As all do not have poultry houses, a box similar to the one shown in fig. 3 may be adopted. A light frame work of lath is placed over the box before moving. L. D. S.

Two Errors in Draining.

The first error in draining is that too many farmers never get at it. The representations of the profitableness of thorough draining are abundant in our agricultural journals, and in the reports of our State and County Agricultural Societies. Tiles are advertised, far and wide, at very reasonable rates, and tile-making machines are in the market, so that if a farmer be too far from a tile factory he can make and burn his own tiles, if he has a bed of clay upon his farm, or is within easy reach of one. Thorough drainage is said to pay for itself in one, two, or three crops after the tiles are laid. It is a permanent investment, and lasts for a hundred years or more, making the best grass lands in the world. Farmers without exception are enthusiastic in praise of tile draining, after they have once tried it, and rarely rest until every square rod upon the farm that needs it is underlaid with them. Yet the average tiller of the soil is slow to receive these statements, and still slower to open his first drain. He has plenty of wet lands, rich in ferns, mosses, flags, poke root, skunk cabbage, hard-hack, rushes, elders, wild roses, and all that coarse herbage that tells of water upon the surface, but he does not seem to see it. He has not the capital to drain with, or thinks he has not, which is quite as bad. He has money enough, or sufficient credit to buy more land, railroad stock, to lend on bond and mortgage, but none to put into "crockery," as he facetiously calls the tiles. The wretched quagmires, bogs, and swales, now an offence to the eye, and a drain on the purse, might be made to blossom as the rose, but he dies without the sight. The next error is that when he ventures upon draining it is not thoroughly done. It is merely a surface job, which does not effectually relieve the land of its water and remedy its defects. The roots of all cultivated crops will penetrate the soil three or more feet in search of food if they have the opportunity. He drains a foot or eighteen inches, if he does not strike hard pan nearer the surface, and calls his job finished. There is, of course, some advantage in this surface draining, but it is slight in comparison with thorough draining, which should never be less than three feet, in all soils, where there is fall enough to allow it. This makes fewer drains necessary, and gives a much larger feeding ground for the roots of plants. As the water goes out in the drains the air penetrates to the depth of three feet, and is continually working healthful changes in the soil, transmuting inert matter into plant food. The rains of summer and the frosts and snows of winter are continually enriching a deep-drained soil. The hard pan, commonly found in these clayey soils that need draining, is gradually disintegrated, and the crops are wonderfully increased. It is somewhat expensive to penetrate the hard pan with pick, crow-bar and spade, but no labor in the process of draining pays better. A job of this kind, well done, may be classed among the investment securities. It will pay good interest promptly for a hundred years and more. CONNECTICUT.

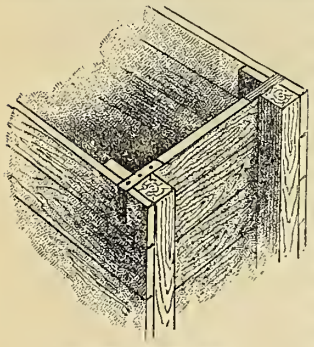
Winter Rations for Poultry.

As staple food, nothing is better and nothing is so cheap as good Indian corn, and one meal a day may safely be of this grain, either ground or whole. Grinding is of less consequence for poultry than for the larger animals, as every bird carries a complete mill for this purpose, and puts in a new run of stones as often as it can get to the ground. A variety of grain is always acceptable; wheat screenings, buckwheat, oats, and rye, the last rather sparingly. Cooked food is highly relished—potatoes or turnips, boiled and mashed with Indian meal, scalded and fed warm, especially on frosty mornings. Fowls are very fond of vegetables, eaten raw, and if sugar-beets or mangels or turnips are put within reach, they will help themselves. For an appetizer, nothing is better than cabbage or the tops of turnips. Hens never tire of cabbage, and a good supply for winter should always be laid in. Animal food in some shape must be furnished, if you want plenty of eggs. Shore farmers can get fish offal from the markets, clams from the banks, or minnows from the ditches. Skimmed milk is always in order, and meat scraps from fat trying establishments, sold in large cakes, and placed where the hens have free access to them, are a cheap and excellent food for laying poultry.

Fire-Wood for summer use need not be altogether of the best. In almost all woods there are trees growing which are veritable rubbish, and should be cleared away as they only take up room, and make drafts upon the soil to the injury of better trees. In a wood, where white oak, hickory, beech, maple, chestnut, etc., grow, the poorer trees are birch, white and black basswood, pepperidge, tupelo, or sweet gum, red oak, etc. These should be cut off and kept down. With few exceptions they make tolerable fire-wood. Some of the red-oaks are watery; pepperidge is hard to split; white birch soon gets "dozy," but they all burn, and even the worst of them may be used to advantage with other wood in keeping a slow fire, which is often desirable during the summer months.

A Door for a Pig Pen.

Mr. C. W. Castellow, York Co., Maine, sends us a description of the end or door of a pig pen that may be removed and replaced with ease and dispatch. He writes: The corner posts are two by two joist, to the outside of which the boards for the sides of the pen are nailed. A piece, one by two inches, is nailed on the inside of the boards, parallel with the corner posts and one inch from them, thus making a slot for the end boards to slide in. The end boards are sawed square at the ends, and placed in the slots without nailing. The top board has an L-shaped piece of one-fourth by one inch iron, screwed on the top at each end, so that when the top board is in place, the irons fit over and outside the side boards of the pen, thus holding the whole securely together. The engraving shows the end boards fastened as above described. In case the pen is built in the corner of a building, the wall end of the upper board should be fastened with a hasp and staple.



DOOR TO PIG PEN.

How to Bring them Under Subjection.

Bulls often become unruly, and positively dangerous, as they advance in years. Unless kept completely under control, they must be sold to the butcher when four or five years old—lest they may do serious injury to persons or stock. There are many ways suggested for overcoming this evil, but no method has been found positively efficacious in all instances. It is necessary to commence training early to accustom them to submission. If one can keep the bull from learning his power, from realizing what he is capable of doing, it is well, but the moment he finds, by actual trial, that he can get the best of man or beast, just so soon is he unsafe. No matter what restrictions may be put upon him, he is constantly watching for opportunities, and in a moment of forgetfulness on the part of his master, may assert his power and even gore and trample him to death.

One of the finest bulls I ever raised, a pure-bred Guernsey, was sent to the butcher at five years of age, as he could break almost any rope, and break or straighten any snap which might be fastened to the ring in his nose. He contracted the habit of goring horses which were in the same field or enclosure, nearly disembowelling a valuable mare, and tossing two or three well-grown colts quite over the barn-yard fence. When he was young, I put a ring in his nose, and taught him to submit to being led and fastened thereby. When he was eight or nine months old, he was broken to a bridle and bit, and a boy was put on him every day, driving, or rather riding him, for an hour or two each time. He was under complete subjection until past three years old, at which time one of the men tied him up with an old, weak piece of rope, which the bull accidentally broke. Ever after we could not tie him, as he would carefully lay back until the rope was tight, and then pull steadily until it was broken. A cross horse which was in the barn-yard, once started for him, but was soon worsted, and after that the bull was master of the yard. Some persons advocate knocking one eye out of the bull, which, while it may be effectual in taming him, is cruel, and does not commend itself to humane breeders of fine stock. Be gentle but firm with the animal when he is young. D. Z. Evans, Jr.

Pitting Beets and Mangels.

Many persons are deterred from raising sugar beets and mangels, through the supposed difficulty of keeping them in good condition through the winter. They suppose that a room or cellar, in connection with the stables is essential to the proper storing of the crop. This, to be sure, is desirable, and would pay well in building or remodelling a barn, but it is by no means essential in keeping beets and mangels. They may be preserved by pitting, as easily as cabbages or carrots. The conditions of safe keeping are good drainage and covering enough to guard them against the hard freezing and sudden thawing. Select any gravelly or well-drained sub-soil, near the stables, or in the field where they are grown. Remove the surface soil ten or twelve inches deep, with plow and scraper, about four feet in width, and as long as may be necessary to hold the crop. Remove the tops without bruising or cutting the roots, and so stack them, as to make a roof steep enough to shed rain when they are covered. Dry, sandy earth may be sifted in among the roots as you stack them.

This will aid in keeping the temperature more even through winter. Cover the roots with about six inches of straw or refuse hay, and outside of this, place six inches of surface soil. When this becomes frozen, and the frost increases, six inches more of soil should be added to the roof. Much of the work of covering may be done with the plow, by turning the furrows toward the pit. If one end of the pit is kept thickly bedded with straw the covering of this end will not freeze hard, and the roots can be removed at any time, as they are wanted. Turnips, carrots, and parsnips may be kept in the same way, and be always accessible for winter feeding. With a good supply of these roots, so easily raised on any land in good heart, all our stock can be carried through the winter in much better condition, and be made much more profitable than without them. They are an excellent substitute for green pastures, and those who cultivate and feed them largely, may not suffer much loss if they fail to adopt ensilage.

Keeping Cabbages and Celery.—For several years past we have kept sufficient cabbages for family use, for feeding poultry, and for the family cow, by burying the heads about six inches deep, and covering them with sea weed, mostly eel grass—about a foot in thickness. The spot selected is a gravelly hillside, where the water cannot stand. A furrow is opened with a spade long enough to hold twenty heads of cabbage. The soil for a second furrow is put upon the row of inverted cabbages. The second trench is filled in like manner, and the soil from the third furrow is used for their covering. This process is continued until all the cabbages are buried. As soon as steady freezing weather begins the whole bed is covered with the sea weed. Any other covering, as straw or leaves, would answer quite as well. The cabbages are accessible at any time, by removing a portion of the covering. They are also readily stored, by cutting off the heads and packing them in barrels, and sinking the barrels about two-thirds of their length in the ground. Celery may also be preserved in the same way. The barrels should be covered with their heads, and also with leaves or straw. Either of these methods is much better than storing in the cellar. C.

A Land Scraper.

In districts where land needs draining, scrapers must be used. A very good one is shown in fig 1. It has one advantage over

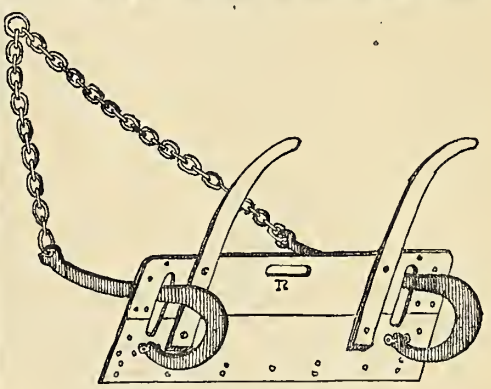


Fig. 1.—A LAND SCRAPER.

most scrapers: the team can stay on the bank while the scraper is thrown into the ditch. When the ditch is a large one, 14 feet or more wide at the top, it is only necessary to lengthen the chain. The scraper consists of two boards, 12 inches wide and 3 feet long, fastened firmly together by two strong iron

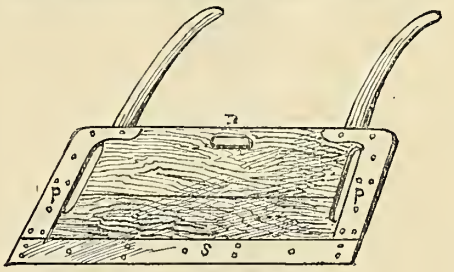


Fig. 2.—FRONT OF SCRAPER.

plates, fig. 2, *p*, *p*, bolts, and rod-iron nails. The scraper-edge is made of an old cross-cut saw, fastened on with rod-iron nails. Two notches are cut at *p*, *p*, for the hooks to pass through also one at *n*, for a holder for lifting the scraper when necessary. To make the scraper work perfectly, the rod or hook should have the right bend, as shown at *a*, fig. 3. The

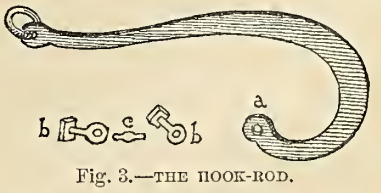


Fig. 3.—THE HOOK-ROD.

hook is fastened to the scraper by two bolts, *b*, *b*, fig. 3, and small pins, *c*, when the land scraper is complete. C. W. Yost.

Proper Housing of Domestic Animals.

BY PROF. D. D. SLADE, HARVARD UNIVERSITY.

As winter approaches, when farm animals are to be kept housed much of the time, it concerns the owner to keep them in as perfect a condition as possible, and thus contribute not only to their comfort, but to his own pecuniary advantage. To this end, ventilation and cleanliness are most important factors. Yet, in spite of the advance of knowledge and education among our people, they are still most lamentably neglected. Proper ventilation is essential to the well-being of all animals, the human included. Yet, for the sake of convenience and so-called economy, how many shut themselves up in rooms heated by close stoves, without any regard to the admittance of fresh air, so abundantly supplied to our fathers by the capacious chimney and the fire on the hearth. Fortunately for his animals, the carelessness of the farmer provides for them what he denies himself, as the pure air makes its way through many a crack in his neglected barns and stables. It is not necessary to know the exact number of cubic feet of air needed by each animal; the odor is sufficient to inform any one whether the air is sweet or foul. Nor is any special mode of ventilation essential, so long as a due amount of fresh air is admitted without subjecting the animals to cold drafts.

Ill-ventilated barns and stables are often made doubly offensive and destructive to health by over-crowding. This is constantly seen in large dairy establishments, where the cows are so crowded that they can scarcely lie down with comfort, and without danger of injuring their companions. In livery stables, also, a large number of horses are crowded together into stalls so narrow as not to admit of that rest and comfort which the animals so sorely need, and into buildings without regard to ventilation, especially during the night. The foul air of such stables, when first opened in the morning, is almost insupportable, and we cannot wonder that the bad effects of such a vitiated atmosphere is sooner or later shown in the dullness, loss of spirits and of appetite, the unexplained cough, and the general ill-condition of the animals.

"Cleanliness is next to Godliness." Many years since, in reading the letters of Mr. Henry Coleman, upon the agriculture of England, I was particularly impressed with his frequent allusions to the perfect cleanliness of all the cattle which came under his observation. No wonder that his admiration was excited, when it was, and still is, a rare sight to see in our own country, during the winter and spring, a cow or ox that does not have several inches of hardened compost adhering to the buttocks and tail, a condition utterly inexcusable. So common is this neglect of cleanliness among our farmers, that it is regarded by them as unavoidable, or at least unimportant to the welfare of the animal. This might be easily avoided by a little attention to the proper length and width of stall, and the use of suitable litter. The length of the platform of a cow's stall should be just sufficient to allow her to rest the hind legs upon it comfortably, and the litter should not only be under the animal, but also behind it. In our climate, and under all circumstances, domestic animals should have a good bed, not only as contributing to their health and comfort, but also as a valuable contribution to the manure. This is especially the case with milch cows, if we desire full returns in the milk-pail, and yet there are farmers in every neighborhood who never give such matters a passing thought. The daily use of the card and brush about the head, neck, and body, with the use of sponge and water for the tail and buttocks when necessary, gives so cleanly and thrifty an appearance to the stock, that the farmer, after a trial, will never afterwards neglect conditions so essential to his animals.

Forage or Fodder Crops.

Oats and peas sown together, 2 to 2½ bushels of each per acre, on rich land, well tilled, make admirable hay for both cows and horses, and are off the ground in time to plow and put in corn in drills for late green feed and for dry fodder or ensiloing. The best plan is, after thorough plowing to sow the peas, then to harrow flat and sow the oats, harrowing again and rolling, providing the land be mellow and dry, so as not to pack. This double crop is a tax upon the soil, but it is ordinarily a very satisfactory one. If corn follows it must be well manured, of course, unless the ground be very fertile. If Hungarian grass follows, it will make a crop without additional manure, provided the oats and peas make such a crop as they should. If not rich enough for that, the Hungarian or other millet should be encouraged with bone dust or superphosphate.

The yield of the spring-sowed crop ought not to be less than three tons to the acre, and more is often harvested. If the second crop is ten or fifteen tons of green corn fodder, or two tons of Hungarian grass, hay, or golden millet, the owner has the right to think that piece of land did its duty.

The Chinese Primrose.

We know of no other plant so sure to bloom in window culture, as the Chinese Primrose. Several years ago, we mentioned it as "Everybody's Flower," and were somewhat amused to find that an English author had adopted the name in his work on Floriculture. It is now too late to start with the seeds, as these must be sown in early summer to raise plants for winter blooming; but plants may be had of the florists at a moderate price. In purchasing, be sure to get those which have not been forced, but only exposed to the heat of a cool greenhouse; all the better if they are without buds. The varieties range from white to dark purple, and there are single and double ones of different colors. Besides their pleasing flowers, some have such beautiful foliage that they would be worth growing, did they not bloom. The single varieties flower rather more freely than the double, though we have had much satisfaction from the Double White, when it had not been subjected to too much heat. In the window they need a sunny place, but do best in a room that is not very warm. A little liquid manure, very weak, will help them. Pick off the flowers as soon as they are past their prime, as seed-bearing will needlessly exhaust the plant.

Notes on Our Vineyard.

It is about 20 years since the "Grape-boom," as we should now call it, prevailed, and a new generation of fruit growers has appeared. Those who recall the craze of the period to which we refer, will remember the heated, often acrimonious debates, in which men were discussed, as well as the fruits they advocated. As we look back upon it, we find that the most prominent men have departed, and that some of the varieties they so strongly advocated are now rarely seen. About that time, we put out

An Experimental Vineyard,

of some 50 or more varieties. This was not done so much for the sake of the fruit, for there were several old Concord vines on the place that would make sure of that, but that we might study the vines in this location, which is some 10 miles northerly from New York City, and has the lightest of sandy soils. At the outset we planted, among other varieties, some 25 each of Iona and Israella, for which great claims were made. A few years later we planted a dozen or more vines of the Eumelan. Probably many of our readers can remember when the only varieties of grapes generally grown, were

The Isabella and Catawba.

Both were excellent where they would come to perfection, but very uncertain. The Isabella generally succeeded in city yards, and was better known than the Catawba, which at this day, in perfection, is "hard to beat." Some 30 or 40 years ago, the Isabella was the popular grape. The Hartford Prolific, much earlier than the Isabella, came after a while. This was never properly appreciated, as it was always eaten before it was really ripe. It colors early, and at that time is poor, but when really ripe, is a very different fruit. If the vine is neglected and allowed to ramble, the berries will drop from the stems, but when the vine is properly pruned and trained, this trouble disappears. The great advance in grape culture dates from

The Introduction of the Concord.

This, in the estimation of those who have a high standard of quality, is a poor grape, but its introduction has done more for grape culture than all others together. Even if of second, third, or lower quality, it is a grape, and whoever has a Concord vine, will have acceptable grapes, and plenty of them. The Concord has done a deal of good in showing people that grapes could be easily grown, and in abundance. From the first we have advocated the Concord, because this would surely yield grapes, and then we could lead on to better varieties. The Concord is now the grape of a large portion of the country, while those which were advocated for "high quality," are scarcely known in cultivation.

The Iona and Israella.

There remain of the Israella vines none, of the Iona, just one. The Iona, we admit, is easily the very best grape of its class. In a few places on the borders of our inland lakes it succeeds, but as a grape for general culture, it is utterly unreliable. Of the older varieties we have three Concord vines, one Hartford Prolific, and one Catawba.

Wylie's Hybrid Grapes.

We have several of these interesting hybrids, but find that they are quite useless at the North; they are of excellent quality, and must be of value in the Southern States.

Sunflowers, Single and Double.

Fashions in flowers have shown some strange freaks within the past two or three years. We have already mentioned the sudden popularity of that common weed, the Ox-eye Daisy, which has been seen in large quantities in the florists' stores. This was followed by the common Buttercups, and later still by the coarsest of all flowers, the common Sunflower. The Annual Sunflower, with its broad, blackish disk, surrounded by a row of yellow rays, was pronounced beautiful by a person who is regarded as an authority in æsthetics, and forthwith it comes from obscure back-yards to be flaunted on the fashionable promenades. But however coarse and lacking in real beauty the common annual species may be, there are some Sunflowers which in their proper place are really desirable. In former volumes we have pictured and described several tall perennial species, which are worth growing wherever there is room, such as the Graceful Sunflower (*Helianthus orgyalis*). Maximilian's, and others. In these, the flowers are single, that is show a distinct disk, but the heads are small and are less coarse than in the annual species. For making a warm, bright effect in the garden, the Double Many-flowered Sunflower is especially valuable. It is given in the works on gardening and in the catalogues as the double *H. multiflorus*, and is said to be from Virginia. The single form has been cultivated in Europe for over 200 years, and as no species like it is known to grow wild in this country, its place of nativity is very doubtful. The plant grows about four feet high, with numerous branches, and heart-shaped, rough leaves; the heads of flowers are numerous, three or four inches across, and consist entirely of ray-florets, or are "full double." They are of a rich golden yellow, and quite as showy as a Dahlia. The plant is perfectly hardy, and is readily propagated by the division of its thick, fleshy roots, every piece of which will make a plant. The engraving gives the form of the flower, of course reduced in size.

THE DOUBLE MANY-FLOWERED SUNFLOWER (*Helianthus multiflorus*).

What are "Spanish Lilies."

There are frequently brought to New York, and other seaports, large bulbs which are offered at the stores where West India fruit is sold, as "Spanish Lilies." These bulbs, from the size of one's two fists, to that of a child's head, look somewhat like an enormous onion. They are not properly lilies, but if planted out, according to the season in the open border, or potted for the greenhouse, will bloom and produce interesting flowers. These so-called "Spanish Lilies," belong to the genus *Pancratium*, and while not true lilies, they belong to the related Amarylis family. The name, Pancratium, is derived from Greek words meaning "all powerful," though no one seems to know why. The dried bulbs of some are said to act as an emetic, but they are not used in medicine. There are more than 30 species found in tropical countries, of which some five grow in our Southern States, from North Carolina to Florida. The species sold as "Spanish Lily," is *P. Caribæum*, but these from our southern coast are quite as showy. The bulbs throw up numerous strap-like, flat leaves, and a flower-stalk, which bears at the top an umbel-like cluster of numerous flowers. The individual flowers are very pretty, and worthy of examination, their general structure being shown in the reduced engraving. The flowers are pure white, and usually fragrant, each with a long and slender tube, which splits above into six narrow divisions. There are six long and conspicuous stamens, which are connected by a cup-shaped crown, extending from one to the other, and adding greatly to the beauty of the flower. The flowers of some species open only at night, or in cloudy weather. If the bulbs can be obtained in spring, they may be planted in the open border, where they will produce a profusion of flowers. If purchased late, the bulbs must be potted for the greenhouse. They are plants worth growing, even if their commercial name is a misnomer, as they are neither "Spanish," nor "Lilies."

THE SPANISH LILY (*Pancratium Caribæum*).

The Apple Scab.—Professor T. J. Burrell, Champaign, Ill., gave his results upon the investigation of the Apple Scab, at the last meeting of the Society for the Promotion of Agricultural Science. He stated that during the past season, the scab had been very common in the orchards of the West, some trees not having an unaffected leaf or fruit. Thin-skinned varieties of apples are much more attacked than those with thick skins, some of the latter being almost free from the trouble. The cause of the scab is a minute fungus. The spores germinate in the spring, and any remedy employed should be used early in the season. Coal-oil is recommended as a wash, and kerosene, and common soft-soap, may be used with good results. The weather is a modifying condition, and therefore the amount of the scab will vary from season to season, according to the circumstances of temperature, moisture, etc.

Celeriac—Turnip-Rooted Celery.

Celery is rarely seen in the gardens of farmers. One reason for this is the impression that it is difficult to raise, and requires more labor than can be afforded. In celery proper, that portion eaten is the large leaf-stalks, after they have been made white and crisp by the exclusion of light. The variety known as Turnip-rooted, or Knob-celery, and Celeriac differs from the common kind in having a large root. The two kinds are only different forms of the same plant, the en-

CELERIAC, OR TURNIP-ROOTED CELERY.

larged root being the result of cultivation and selection. In this, the root is the edible portion, and those who find it too much trouble to cultivate ordinary celery, might readily grow this, as its culture is as easy as that of beets, etc., and add to their list of vegetables. It is especially a favorite with the Germans, and not many years ago its cultivation and use in this country was exclusively confined to them. The consumption has of late increased with great rapidity, and instead of being a rarity, it is now seen in the markets in large quantities. The flavor of the root is like that of the stalks of common celery, but rather less mild. It it used with other vegetables in soups, to which it gives a pleasing flavor. Sliced and stewed until tender, and then dressed with drawn butter, it forms a dish that is much liked by those who are fond of celery in any form. Its chief use among Europeans is to form a salad. The roots are boiled until quite tender, and when cold, are sliced and dressed as a salad. To raise Celeriac, the seeds are sown in a bed in spring, as soon as the soil is in good condition, in drills 10 inches apart. The plants are kept hoed and weeded, and when they are three or four inches high, are transplanted. They should have rich soil, and be set in rows two feet apart, with a foot between the plants. The after culture is merely that of other root crops, no earthing up being required. At the approach of cold weather, the roots are taken up and placed in trenches, as we have described for celery, or in boxes in the cellar. The root is irregularly roundish, and as seen in the markets is rarely so large as one's fist, but by giving it rich soil, sufficient room, and good culture, it may be grown to weigh three or four pounds. If the exposed portion of the root be covered with earth a few days before marketing, it will have a more attractive appearance.

How a Farmer may have Pears in Plenty.

BY D. Z. EVANS, JR.

Every farmer who owns his place, should have fruit trees and vines, at least enough for his own use, as fruit is not merely a luxury, but a real necessity in maintaining the healthfulness of the family. The expense for trees and vines, and the cost and trouble of caring for them, is comparatively small. There are varieties suitable to each section of our country, with its widely diversified climate and soil. The enhanced value of a farm, by having abundant fruit trees, more than compensates for the outlay. Apples are generally plentiful enough, yet pears, the newer and finer sorts at least, are too often wanting on our farms. Some varieties, like the White Doyenne and a few others, may be liable to cracks, mildew, etc., in most localities, yet there are still enough excellent sorts which can be depended on, that will fruit comparatively early after they are planted, are good and regular croppers, and bear large, fine fruit.

The Soils for the Pear,

Those soils best suited to the pear are, a sandy or a clayey loam; they should always be well and thoroughly drained, either naturally or artificially, and have been deeply, frequently, and properly worked, for two or three seasons previous, to insure a mellow soil, free from sod and weeds, and in a condition to induce a good growth from the start. A stunted tree is as difficult to make profitable, as is a stunted colt or calf. Almost any soil which can be denominated as "good corn ground," provided it is not too full of vegetable matter, as is much of the prairie lands, will be good land for the pear, other things being equal. We are in favor of early spring planting, instead of autumn, the only thing in favor of the latter being, that when a large orchard is to be set there is usually more time in the fall to do it properly, than in spring, when so many other duties are urgent. Rows are to be struck out, with a two-horse plow, 18 to 20 feet apart for standards, and from 12 to 15 feet apart for the dwarfs, giving them plenty of room. Holes are dug large enough to admit the roots without cramping them, the roots well spread out, good and fine soil first put on, then other earth, packing the ground down firmly with the feet as the hole is being filled up, and the earth then mounded around the tree to allow for settling. If the soil is not pressed firmly to the roots, but few of the trees will live, and it is a good plan to dip the roots of the trees in thick mud before planting, in order to make the soil adhere to them. The trees should be well headed back, and all bruised, broken, and injured roots, neatly cut away with a sharp knife; this should be done before the trees are taken to the field to be planted.

Beautiful Christmas Roses.—The Black Hellebore (*Helleborus niger*) is called Christmas Rose in England, because in that country it often blooms in December. With us it flowers in early spring. It is not a common plant in our gardens, as it does not flourish with full exposure to our hot suns, but needs a partly shaded spot. The plant has nothing rose-like about it. The much divided thick evergreen leaves proceed directly from the root, as do the flower stems, which are 6 to 12 inches high, and bear one to three white flowers three inches or more across. The flowers last for weeks, and on this account the plant is well worth growing in pots. In a cool greenhouse, or in window culture where the room is not overheated, it will do admirably. Within a few years the European florists have produced a number of hybrids between this and other species, some of which are of surpassing beauty, and when once known will become popular. In some of these the leaves and flowers do not come directly from the root, but are upon stems 6 to 12 inches high, each bearing several flowers. We hope that these plants may prove to be easily propagated, as they can not fail to be favorites.

Corn Salad—Lamb's Lettuce.

Aside from Spinach, the earliest green thing in the market from the open ground, is Corn Salad. Its cultivation is far from general, though it has increased greatly within the last few years. The plant is a native of Southern Europe, and is cultivated largely on the Continent; it is also grown, but less generally, in Great Britain, where it having become a weed in the corn, as wheat is there called, it gets one of its names. The botanical name is *Valerianella olitoria*, and as this would indicate, it is a near relative of Valerian. It is an annual, rarely more than six inches high, forming a tuft of rounded-oblong leaves, about two inches high, before the flower stalk appears, in which state it is gathered for use. At this time it has the appearance shown in the en-

THE CORN SALAD, OR LAMB'S LETTUCE.

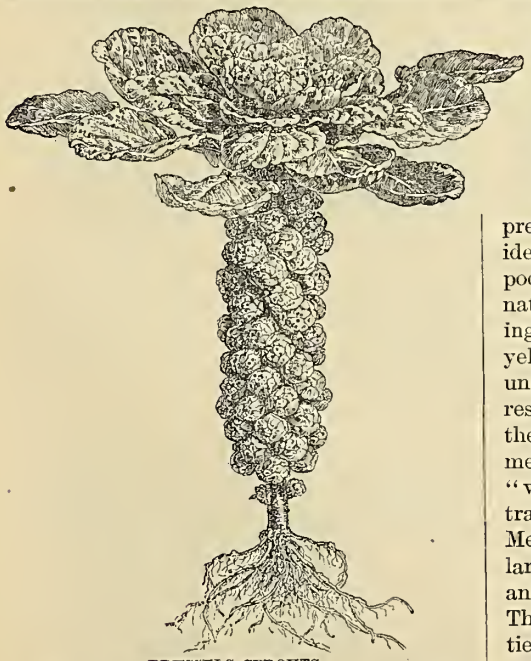
graving. The culture is the same as that of spinach. The seeds are sown very early in the spring, and also in September at the North for the earliest crop, the plants remaining in the ground over winter. At the South, sow in December and until cold weather closes the ground. The plant is usually pulled for market, as the small roots make it lie up lighter in measuring. It is sometimes marketed in small baskets like those used for Water Cress, but most commonly sold by measure. The chief use of the plant is as a salad, either by itself, or mingled with celery and other vegetables. While some highly esteem it, others look upon it merely as a medium for eating oil and vinegar. In Europe it is also cooked like spinach and served in the same manner.

Freezing and Frozen Plants.

Those who have window plants cannot always keep the temperature of the room sufficiently high at night to make sure that no harm will come to them by frost. Where it is feared that they may freeze, it will be well to cover them at night, either with a sheet or with newspapers, which are quite as good. It is not difficult to arrange a covering by the use of strings and sticks to hold the papers up above the plants. A canopy of this kind will prevent the radiation of heat from the pots and the plants, and be of great service. In a collection of plants, some will be much more severely injured by freezing than others, but nearly all, if not too much exposed, will soon recover, unless suddenly warmed. When the plants are found to be frozen, make the change to a higher temperature very gradual. Remove them to a room where the air is but a few degrees above freezing, or if this can not be done, warm up the room where they are, but very gradually. In moving frozen plants it must be done with great care, as in their frozen state they may be readily injured. Sometimes the newer shoots will fail to recover, while the leaves of the older wood will resume their natural condition. When this occurs all those parts that fail to recover should be removed—cutting back with a sharp knife to a sound portion of the stem.

Brussels Sprouts.

A vegetable that one sees in the greatest abundance in European markets, and rarely in our own, is Brussels Sprouts. This is one of the several forms in which the cabbage has been developed by cultivation. Instead of forming a single head at the top of the stem, like the ordinary cabbages, numerous small heads are produced upon the stem for its whole length, as shown in the engraving.



BRUSSELS SPROUTS.

These heads are the axilliary buds which develope into little compact cabbages like a miniature Savoy. The leaves of the stem soon fall away, and in a good variety the small heads will be so numerous and close together, as to completely hide the stem.

When or how this variety of the cabbage originated is not known, but it was cultivated in Belgium as early as the year 1213. The cultivation is the same as for late cabbages, and as the plant is quite as hardy as those, it is strange that it is so little cultivated. The

THE VEGETABLE CATERPILLAR.

only drawback to its culture that we have found, is the great fondness of plant lice for it.

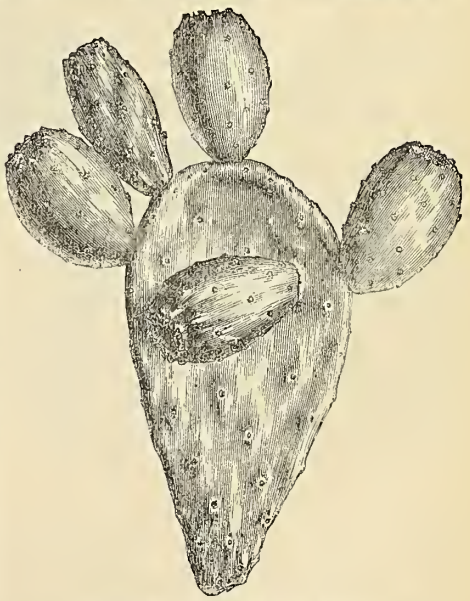
Brussels Sprouts are evidently derived from the best of all cabbages, the Savoy, and have the same delicate flavor and tender, marrowy texture. They may be cooked and served in the same manner as cabbages, but are much improved in flavor if treated like cauliflower, with a sauce of drawn butter.

Worms, Caterpillars and Snails.

A friend, observing in a seed catalogue seeds of "Worms," "Caterpillars" and "Snails" offered for sale, is naturally puzzled, and desires an explanation. Some plants have flowers closely resembling insects in appearance; others show this mimicry of animal forms in their seed pods. Those enumerated are the pods of plants of the Pea Family, and bear a resemblance more or less close to the creatures indicated. The engraving, which represents a vegetable caterpillar, will give an idea of these peculiar productions. The pods are those of *Scorpiurus muricata*, a native of Europe. It is an annual, with trailing stems, about two feet long, and small, yellow flowers. The worm-like pods, when uncoiled, are about two inches long. The resemblance to a caterpillar is increased by the lengthwise ridges, upon which are numerous small points or tubercles. The "worms" are the pods of a species of Astragalus, and the "snails" are those of a Medicago, which are coiled with great regularity. As the latter ripen they turn brown, and then very closely resemble a small snail. The plants are cultivated merely as curiosities. The French often use the pods to garnish a dish of salad. One unacquainted with the real nature of the pods would be not a little surprised to meet with one of them on his plate. Some persons have such an aversion to all crawling things that the surprise may not always be a pleasant one, and on this account it is not probable that this use of these plants will be extended.

The Indian Fig or Prickly Pear.

At the fruit stores in New York, and no doubt in other cities, there is often on sale, under the name of Indian Fig or Prickly Pear, a fruit so unlike others in appearance as to excite curiosity. Several persons have purchased and brought these Pears to us to ascertain what they were. The fruits are of the shape shown in the engraving, rather smaller than a hen's egg, and of a light yellow color, with sometimes a blush of red on one side. They are the fruit of a Cactus, *Opuntia Ficus-Indica*, which is a close relative of the common Prickly Pear of this country. It is a native of South America and the West Indies, and is cultivated in other warm countries. As the engraving shows, the plant has flattened joints, much like those of the common Prickly Pear; the whole plant is made up of such joints, and forms an irregular branching bush, six feet or more in hight. The flowers are reddish, and are produced in great numbers, to be succeeded by an equal profusion of fruit. The fruit has a mucilaginous pulp, not very sweet, and without a decided flavor: indeed to those unaccustomed to it, it is rather insipid. In Sicily the plant has long been cultivated, and has become completely naturalized. It is said that the poor people there subsist almost entirely on the fruit for four or five months in the year. A number of other species produce edible fruit, including our native Prickly Pear. The writer has met with species in Northern Mexico, with dark crimson fruit, having flesh of a similar color, which seemed at the time the most delicious fruit he ever tasted. One objection to all Cactus fruits, is the minute prickles with which they are beset; unless these are carefully removed, a painful irritation of the lips and mouth will follow the eating of them. The Mexicans make a wisp of grass, and brush the fruits while still upon the plant, and before handling them. The Indian Fig



A PORTION OF INDIAN FIG PLANT.

will flourish in most of our Southern States; it indeed already grows wild in the extreme southern part of Florida, either as a native or an introduced plant. It will grow in the poorest soils, even among stones, and is easily propagated. If a piece with one or more joints is stuck into the soil, it will take care of itself.

THE HOUSEHOLD

A Christmas Cross of Mosses.

BY KITTY CLOVER.

Very pretty Moss Crosses can be made by following the directions below, with little trouble and expense. They are especially beautiful as Christmas decorations. Wreaths and stars can be arranged in the same manner. The frame, made of any kind of wood, no matter how rough, is 12 to 14 inches high, and the length of the arms in proportion. Gather from the woods a large quantity of the soft crinkly moss, which clings to rocks in damp places, and carefully dry it in the sun for a few hours, then scrape off the loose earth neatly. Make a stiff paste of flour and water, and spread it over the back of the moss, and cover the entire cross. Paste a piece of scarlet flannel on the bottom end, to keep the table from being scratched, and to give a neater appearance to the work. While collecting the moss, gather also other ornamental things, such as the little red cups and white cups among the gray "mosses," and little twigs covered with lichens. The hanging "moss," called "Old Man's beard," is very pretty, and you will need yards of it. The Bitter-sweet is another essential ornament. Tiny autumn leaves, and small ferns can be pressed and made of great service. When the moss covering is dry, the cross is ready for decorating. Begining at the base, make a mound all around it of the little red and white cups; stand among these the little moss-covered twigs, also ferns, and a delicate variety of dried grasses. The body of the cross may be arranged according to taste, adding the different kinds of mosses and lichens, which grow on rocks in various shapes and colors. A small vine that nature has gaily colored, may be pressed, and gracefully twined across the front. Add the bitter-sweet berries to help give brilliance. When the decorating is finished, drape in a light graceful manner with the hanging moss. When completed, this cross is a beautiful and appropriate emblem for Christmas.

A CROSS OF FERNS, MOSSES, LICHENS, LEAVES, AND BERRIES FOR CHRISTMAS.

The External Use of Oil—Oil of Cream.

Physicians seem to countenance the practice of rubbing the human body over with some kind of good oil, as a curative and a preventive of disease. For many years past I have been reading and hearing occasional testimony as to the virtue of oil when applied to the skin. I have a suspicion that this is much like the various herb teas given to babies and invalids, to cure their aches and colds. In the latter case I think the virtue of the dose is in the hot water rather than in the particular herb steeped in it. Hot water alone works wonders, and in the various anointings that work marvelous cures I suspect that the potency is not so much in the oil or the drugs compounded with it as the *rubbing*. Hot lard rubbed into sprains has often had an excellent effect, and goose grease is one of the regular "old woman's remedies." There is certainly a choice in oils, and the grease from unhealthy swine would never be chosen for either outside or inside application. Grease from the goose, turkey and chicken, carefully tried out, are all better than lard. Beef and mutton tallow are both too solid for this use. Olive oil (sweet oil that is fresh and pure), is much used. Cocoanut oil is perferred to this, but is sometimes rancid, as any oil may be if not carefully prepared and kept.

A lady of my acquaintance, who has tried various oils for several years, with much benefit, prefers "Oil of Cream" to all others. She makes it for her own family use. Good, thick, sweet cream is put in an iron vessel upon the top of the stove, where it can boil slowly. It is stirred as it boils, until the watery portion has all boiled away; it is then strained through a cloth and is ready for use. If the water in the cream has been fully removed by boiling, the oil will not grow rancid or spoil with age. Several who have used olive oil and oil of cream greatly prefer the latter, imagining that it has "more virtue" in it, when it may be simply that its different texture causes it to be more readily absorbed by the skin. No one who has seen the prompt effect of greasing a baby's nose upon the appearance of "snuffles," or experienced the relief to a cold in certain stages, of greasing the outside of his own nose can doubt the frequent efficacy of oil. In some cases of emaciation it is claimed that the skin absorbs oil with good effect. Acquaintances of mine tell me that a little oil rubbed well over the body after a bath (the weekly bath for cleanliness) makes them feel much better than the bath alone, and they believe strongly in the nourishing effect of oil applied to the skin, especially when there is poor assimilation of the food taken. F. R.

[The external use of oils dates very far back. In the ancient Roman baths there was an apartment called the *unctuarium* or "greasing room," where oils were applied. In our large cities some of those who give "Turkish baths" also give "Roman baths," which includes a polishing off with oil, claimed by them to be the genuine "Roman," whatever that may be. There are differences of opinion as to the value and efficacy of these various kinds of baths.—ED.]

"Just for Looks."

BY LUCY RANDOLPH FLEMING.

A little boy was playing around the table set for dinner, busily arranging several spoons which he had taken from the side-board. "What is that for?" inquired his mother. "Oh," said the little fellow, in an apologetic tone, "*just for looks.*"

There was an idea in the child's mind, an element which, if properly directed, would grow into something well calculated to give pleasure to himself and others. There often appears in individuals, and even in some whole communities, particularly rural ones, a seeming contempt for any improvement put forward "just for looks."

City regulations provide for the removal of garbage, and compel householders to be careful as to unsightly objects on the premises; but in villages and agricultural districts these matters are not so closely looked after by boards and corporations. The householder, who "just for looks," is careful about emptying slops in the back yard, and the various odds and ends which accumulate about the premises, is not only instituting neatness and order, pleasant to the eye, but doing a good work for the health of her own home and neighborhood.

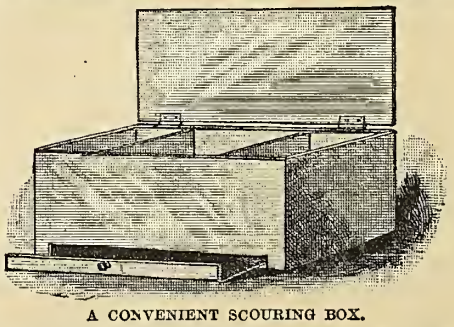
Within doors, I would advocate many little things, for whose doing we can give no other reason than, "just for looks." A very little management makes the table pleasant to the eye; not merely a place at which we gather to eat. Expensive adornments are not essential. It requires no more time to set dishes straight than crooked.

Not only does attention to outside appearances beautify the home, but it pays as well. The painted fence about an inclosure will last longer than an unpainted one. The gate swinging free upon its hinges is certainly more lasting than if suffered to drag upon the ground, uttering a most unhospitable welcome to the visitor. The scraper at the step and mat at the door, for muddy feet, the tasteful wall-basket for loose papers, the neatly-covered shoe-box, serving for a seat as well—are all little things of great value.

If there are children in the household this attention to appearances will exert more influence than many are aware of. The little one required to have clean hands and smooth hair before sitting down to a meal is not very apt to grow up a man or woman careless of personal neatness. This attention to small things is not an evidence of mental smallness. A sense of order, a conviction of the *morality* of cleanliness, a nice development of taste, may not be given in the same degree to each one, but in beautifying our homes, in giving due regard to the adornment of our persons, in seeking out various conveniences, which often prove amenities of life, if we can act upon no better principle let us do it "*just for looks.*"

Box for Holding Scouring Materials.

A box in which all the various materials required for burnishing silverware, knives, brass, and the more common tinware may be kept, is a convenience to every house-keeper. A very useful



A CONVENIENT SCOURING BOX.

box for the purpose is easily made from a small wooden one, by placing a few partitions in it, and a drawer in the lower part. The one illustrated was made from a starch-box, and the wooden boards used to form the divisions, are fastened in place with screws. The lower portion of the front is cut out, and a drawer fitted in. This drawer has a strip ten inches deep across the front, but none around the sides or back. It readily slips in and out, and can be entirely removed when knives are scoured upon it. The upper part is divided into three compartments, the largest for holding the soft cloths and brushes used for scouring, the next largest for the bath-brick, scouring soaps and sand, used for knives and general scouring purposes, and the smallest for the finer powders used on silverware. The drawer has a small knob on the front. The lid is fastened on by suitable hinges.

A medium sized cork is much better than a cloth for scouring knives, and if the bath-brick is pulverized and put in a bottle, it is always ready for use. Nothing but the finest of powder should be used on silver. Bath-brick should never be employed, as the coarse grains scratch and mar the silver. Before scouring, the silver should be well washed in hot water, to which one teaspoonful of liquid ammonia to one quart of water has been added. It should never be washed in soap suds, for the soap will soon give it a dull appearance. Silver can be made bright by the use of prepared chalk (whiting), mixed into a paste with ammonia. It should be mixed as wanted. A good scouring soap is made by cutting a one pound bar of laundry soap into small pieces, and dissolving it in hot water, using as little water as possible. After being dissolved, stir into it enough fine river sand, to make it thick, then spread on a shelf to dry. Cut into cakes and let it dry well before using. The longer it stands before using, the better, and it is a good plan to make a quantity at a time. Ammonia, bath-brick powder, and kerosene mixed together, are good for cleaning zinc and brass. L. A. B.

A Convenient Scrap-Box Ottoman.

To make the convenient article here illustrated, select a strong wooden box, and fasten on a lid with small hinges. Around the sides of the box

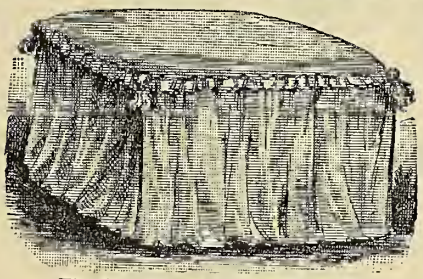


Fig. 1.—A SCRAP-BOX OTTOMAN.

place a curtain of some pretty material; chintz, or furniture calico is suitable. Tack it closely to the upper edge of the box, and put a few tacks around the lower edge to hold the cloth in place (fig. 1). Lay several thicknesses of old carpet, or worn out comfortables on the top of the lid, and tack on a cover of chintz. Make a full frill of the chintz about

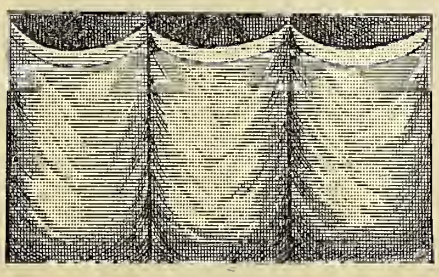


Fig. 2.—END OF OTTOMAN.

three inches deep. Tack this around the edge of the lid, so that it will hang over the top of the chintz upon the sides, and tack a heavy worsted tassel to each corner of the lid. It is, however, the interior arrangement of the box that makes it of greatest use in every sewing room. On one side is tacked three pockets (fig. 2,) of some strong material. The pockets on the opposite side are as wide, but only half as deep, making six on that side. On each end are two deep pockets, similar to those on the side. These pockets are for holding scraps of goods used in working, thread, braid, buttons, and anything which is needed in general family working. On the lid are tacked two strips of inch-wide elastic ribbon (fig. 3), divided into several loops, with two

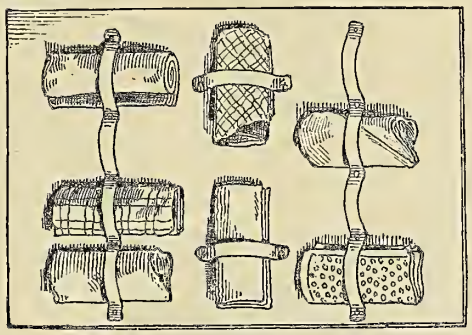


Fig. 3.—UNDERSIDE OF THE LID.

loops across the space between the longer strips. These are to hold rolls of muslin, or any goods, or patterns which it is more convenient to keep by themselves. The space left in the middle of the box gives a place for more rolls of scraps, or for holding articles for sewing.

Hints for Christmas Gifts.

"What shall I make for Christmas?" is the question that is now heard on all sides, and a few hints for simple and easily-made fancy articles may prove of use to our readers. When the geese are killed, be sure and secure all the soft downy feathers, for down pillows are one of fashion's newest fancies, and they are certainly delightful for sofas, and large easy chairs. These pillows are half a yard square, covered with pliable silk or *satin merveilleux*, and embroidered in dainty designs, or they may be made of the India silk, which comes in exquisite patterns of flowers, almost as beautiful as handwork. If the pillow is to be used by an invalid, a case of linen to be drawn on and off should accompany it, and this may be made quite elaborate by drawing the threads, and working them over with colored linen thread.

For a young lady, a chatelaine bag will be an acceptable gift. The shape is usually a square, with three gathers at the top, but it is prettier to round the corners, and edge with lace. These bags match the costume with which they are worn, or for evening wear are made in the shape of a triangle or heart, of satin, or black velvet, and painted or embroidered with bright red strawberries, with butterflies hovering over them. A spray of holly with its brilliant scarlet berries, would also be pretty. They are suspended from the arm by a colored ribbon, tied in a bow at the top.

Grandma will appreciate an embroidered velvet case for her spectacles, and a tasty autumn-leaf pen-wiper may be made of four shades of cloth—red, brown, old gold, and olive. Cut one of each color, but of different sizes, into the form of a maple leaf—for which natural leaves will serve as patterns—and vein with silk, the red with green, olive with scarlet, gold with brown, and brown with yellow. Arrange them in a spray, overlapping each other, with two medium-sized ones in the center, and a small one at the top. Back with a piece of the olive cloth, and put in two bits of Chamois skin for the wiper, fastening all together with a bow of cardinal and old gold-colored ribbon.

A pretty design for a wall-pocket, is a pair of bellows. The shape of the bellows should be cut out of thin wood or paste-board, and covered with cretonne satin, or plush, as may be desired. Three-cornered pieces of silk are fitted in the sides, and the nozzle is formed of a graduated roll of paste-board, covered with gilt paper. The front may be decorated in any way that fancy dictates.

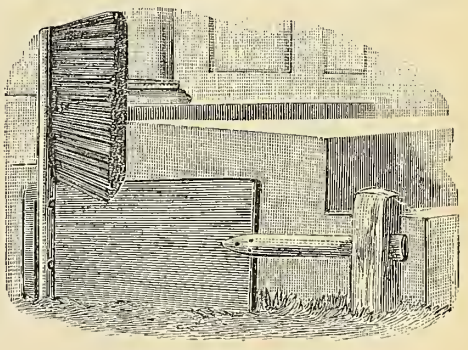
Stocking Heels and Legs.

Every one having the care of the family stockings, knows that the heels usually suffer most wear. I find it an excellent plan to reinforce them with strong cloth heels while new, and replace the cloth heels as often as necessary. Use the stocking as a pattern, cut the cloth to reach from just over the joining of the knit heel, to the foot, and about three inches up the back of the foot. The seam may be on the back or bottom of the heel. For colored stockings, strong dark drilling, or heavy gingham, answers well. On thick woollen stockings, I use waterproof or jean that is not too stiff. Sew thin heels upon the outside of the stocking, as the hard wear comes from the shoe or boot. Do not turn in the edges to hem it on, as that makes a hungling ridge, but first run it around near the edge, then hem over the raw edge if you have time for this finish. Be careful not to stretch it too much, or allow it to be fulled. A darning ball inside the stocking makes the work easier, as this keeps it in better shape. The cloth heel is apt to set better if folded on the bias, and rounded away so as to run up the back almost to a point. This reinforcement put on while they are new, preserves the stocking heels admirably, and adds warmth. When worn out they are more easily renewed than to darn the stocking heels. They look a little odd at first, but that is of minor importance.—As the stocking feet usually wear out first, there are often good stocking legs, which may be easily cut down for younger children, and they may also do good service in making the children's under-garments. I know a lady who uses good woollen stocking legs, to piece out the under-drawers below the knee. She cuts the flannel to come well over the knee, full enough to wear well, and sews the bottom of it to the top of an old but strong stocking leg, so that the flannel is gathered a little, and will stretch as required without breaking the thread and ripping. These elastic continuations of the drawers fit the limbs more smoothly under the stocking than flannels cut to fold over. Sleeves to the flannel upper garments for girls may be made of good old stocking legs.

MINNESOTA HOUSEKEEPER.

How A Scraper was Made.

A correspondent, "B.," in Tasmania, describes how awkwardly he felt, standing at his door, with nothing at hand to remove the mud from his boots, and not wishing to carry the mud into the house.



A GOOD MUD SCRAPER.

He improvised a scraper in this wise: "hunted up an old broken spade, and the head of a worn-out broom. By picking out a little of the mortar between the bricks of my house-wall, I fixed the cutting end of the spade firmly in; then drove a short piece of timber a foot into the ground, and fastened the broken handle into the top of it with a nail. Then with two strong nails the old broom head is fixed to the wall, just above the spade, and now I have a better farmer's scraper at my door, than any costly apparatus I have ever seen."—As all do not live in brick houses, we would suggest that two strips of wood, nailed perpendicularly to the house, and just far enough apart to hold the edge of the spade would answer the same good purpose.

BOYS & GIRLS' COLUMNS

Christmas Eve at the Old Homestead.

BY AGNES CARR.

Merry Christmas! What visions of delight are contained in the very words; and Christmas Eve is the happy, mysterious time to which every child looks forward, with gladdest anticipations, the brightest red-letter day in all the calendar. In far off Germany, the flaxen-haired boys and maidens are eagerly watching for the coming of the fair little Christ Child; while their cousins over in Holland, are straining their ears to catch the sound of the pattering hoofs of Kriss Kringle's tiny reindeer, and our own lads and lassies are dreaming of the beautiful gifts to be brought them by Santa Claus, in his wonderful magical bag. But Santa Claus, Kriss Kringle, or Christ Child, whichever it be, the same good will inspires the visits of each, and Christmas joy makes the whole world akin.

"Christmas comes but once a year,
But when it comes it brings good cheer."

And no where more than to a large family gathering in some dear old country homestead. Without, the fields are white with the frost king's mantle, and the air is bitter cold, but within the yule log blazes merrily in the wide chimney; the spicy odor of evergreens pervades every room, and skillful, loving hands twine the pine, holly, and mistletoe into graceful wreathes and garlands, to deck the walls, making the old home a bower of beauty for the joyful, happy Christmas-tide.

Father comes from town, looking like a veritable St. Nicholas himself, in his great fur coat, the pockets of which are overflowing with mysterious bundles. Mother goes about on "hospitable thoughts intent," baking and brewing, and packing great hampers of good things to send to her poorer neighbors that they may share—in part at least—her Christmas cheer. Sister is shut up in the parlor, from which all others are excluded, and the little folks dance about on tiptoe, in a fever of expectation, trying to steal sly peeps through the key-hole, and raising loud shouts of glee when, coming slowly up the road, they spy big brother Will, driving Dobbin, the staid old farm horse, dragging after him the low sled, upon which rests the tall, wide-spreading Christmas tree. A forest prince was this stately fir, in his native wilds. Birds built in his green boughs. Wee woodland ferns and flowers clustered beneath his protecting arms, and through summer and winter, he lifted his head proudly toward the blue dome above. But he has been chosen for even greater glory, and, as king of the Christmas feast, he will soon stand blossoming with glittering balls and twinkling lights, bearing most wondrous Christmas fruit, and surrounded by smiling childish subjects, who gaily chant his royal praise.

"Isn't it a beauty!" exclaims Will, who had selected the tree weeks before, and all admire the shapely young sapling, while Kathie, the baby of the household, asks, in her happy childish way, if it "grew in Santa Claus' garden."

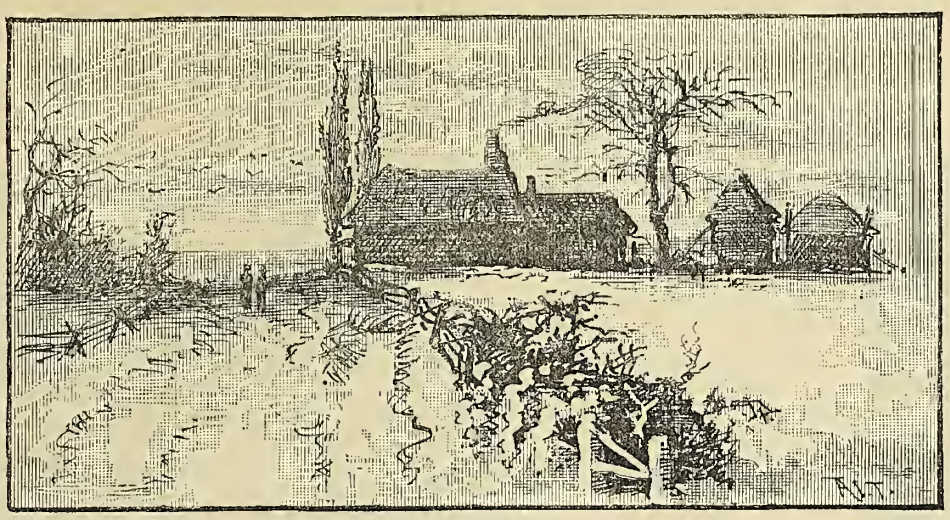
BRINGING HOME THE CHRISTMAS TREES.

Designed by Charles Volkmar, and Engraved for the Amerian Agriculturist.

Coming Home for Christmas.

"If Robert and Nellie were but here, we should have nothing to wish for," says the mother, thinking of her eldest son and a favorite cousin, whose homes are in the great city. And when the soft, early twilight steals on, two forms come up the country road, a stalwart young man and a fair, "flower-faced" girl, conversing in low tones, and glancing tenderly at old landmarks by the way. But ever and anon their eyes turn eagerly towards the light that shines from the farm-house windows, for it is the light of home. A moment more, and the door is swung open wide, a ringing voice cries, "Mother, we have come home for Christmas," the new comers are clasped in a dozen loving arms, and the family circle is again complete.

Gently the dark curtains of night descend upon the quiet earth. The Christmas tapers are lighted in the heavens, and the holy spirit of Christmas broods over all the world, sending forth its sweet message of "peace, good will towards men." A group of choristers returning from a rehearsal at the village church pass by, chanting a glad carol, "Hallelujah! hallelujah in the highest!" reminding the children within the old homestead of the angels that once sang to the shepherds on an eastern plain. And wee Kathie, gazing up at one particularly bright planet, wonders if that can be the "Star of Bethlehem"—that guiding star which heralded the birth of Him who has been a "guiding star" to the lives of so many of the best and the noblest of earth. They think of the little child who saw the light in that far-off stable, whose birth changed the life of the whole world. They think it well to be merry on this night, but with their mirth they mingle grateful thoughts. Joy and merriment resound on every side, but one by one the lights on the Christmas tree go out; the fruit is plucked and distributed; the choristers' voices have long since died away in the



COMING HOME AT CHRISTMAS EVE.

Designed by Alfred Trumble, and Engraved for the American Agriculturist.

distance; the stockings are hung in the chimney corner; and at length the tired but supremely happy little ones wend their way to slumberland, to dream sweet dreams, and prepare to greet the gladsome Christmas morn.

The Doctor's Talks.

The holiday of all the year will come this month! How many of you have already said "Christmas is coming," and counted the days that must pass before this day of days will be here? In many parts of the country it is not only Christmas itself, but the whole week between it and New Year's day, that is given up to merry-making and enjoyment. Hence this week is commonly called

The Holiday Week.

I will try to help you in your merry-making. If rightly looked at, this Christmas time is one for the greatest enjoyment. It is especially the children's day, for it celebrates the birth of that Child who made a greater impress upon the world's history, than any who was born before or since. Then when the Child became grown, how He loved children, and did He not speak those words which have been repeated for ages, and have comforted so many mothers, when He said, "Of such is the Kingdom of Heaven"? There is nothing about Christmas that is not a cause for thankfulness and joyousness. Then let us all have

A Merry Christmas.

But how will you have a "Merry Christmas?" I know of but just one way to find the greatest enjoyment in such a holiday, and that is—to make it "merry," or pleasant for others. It is a lesson that we are slow to learn, and I ask you to take the old Doctor's word for it, and begin young. Celebrate this coming Christmas by making some one, old or young, feel happy. The methods need not be expensive, and parents will be ready to help. Girls will know of some old man or woman to whom a pair of mittens, a comforter, or some little thing they could make, would be very acceptable. Boys cannot knit such things, but they can ask their father for a basket of those nice apples, to take, on Christmas morning, to some poor people who have no fruit. The value of the gift is of no importance. It is to make such people feel that they are not forgotten. The day will not pass without being a "Merry Christmas," if they feel that some human being thinks of them, and all the better if that being is a child. Now having taken this serious view of Christmas—

What are We to do for Fun?

In these holiday times, we make and go to parties, or gatherings of the young folks of the neighborhood. This is the time of all others, for youngsters to come together and be merry, and these children's parties, I am glad to notice, are becoming more and more common each year. I say that I am glad to notice this. It is because it is a useful lesson for boys and girls to meet each other, to get acquainted with, and learn how to entertain one another. At this holiday time many of you will either make or go to such parties. If you give a party to your young friends, be sure to provide for their entertainment. Many older persons think that to entertain a party, they need only to have some refreshments—something to eat. That is well enough in its way, but it is vastly more important to provide some amusements in which all can take a part. A gathering of grown persons who are strangers to one another is bad enough, but one of children, until some romping game has "broken the ice," is still worse; so if you have a holiday party, be sure and provide in advance something to amuse the boys and girls.

You will find some simple, amusing things described in another column. Let me advise you, in all those tricks you perform for the amusement of others, to first rehearse them, to make sure that there will be no failure. That clever puzzle trick of taking the coin without touching the glass, may fail if the table cloth is too thick, or its surface is too rough. If you spread a napkin on the table, instead of the cloth, it will work every time.

Answers to Puzzles in November Number.

GEOGRAPHICAL PUZZLE.—*Caroline* went shopping one day. She bought a *hood* to wear on her head; a string of *emeralds* for her neck; a cloak of *beaver;* some shoes of *Morocco*, and some furs of *sable.* When she came out of the store, *Charles* asked her to ride home with him. The air was *chilly* (Chili), and so he wrapped her up in a *buffalo*, and they rode on through the *woods.* As they were going along, an *otter* peeped out at them from its hole; a *turkey* flew over their heads; a *wolf* howled at them; a big black *bear* ran after them and growled, and they thought they heard the *lions* (Lyons) roar. They were in great *fear.* To add to their terror, the *sky* (Skye) grew cloudy, and they heard a clap of *thunder.* Soon, however, they came out of the *woods.* The *sky* became *clear.* The *moon* shone, and they reached home, and said "*Farewell,*" without any other adventure.

RIDDLE, David.—CHARADE, Nightingale.—NUMERICAL ENIGMA, No. 1, Milton.—No. 2, Catacomb.

"I COTCH YER FUR NEX' CHRIS'MAS, FUR SHUAR."

Designed by Marc Gambier, and Engraved for the American Agriculturist.

Games for a Holiday Party.

Tricks and Puzzles.

Both those who give holiday parties, and those who go to them, can propose these. A very amusing little trick is done thus: upon a table, covered with a cloth, place a dime; cover it with a goblet or tumbler, with its edges supported by quarter-dollars or five-cent nickel pieces, or any other coin of greater thickness than the dime. Having all arranged, as in fig. 1, you ask those present to remove the dime from beneath the glass without disturbing the present arrangement. Some, who have not seen the ruse, may try to blow out the coin, but will not succeed. After all have tried, you have only to scratch the table-cloth gently with the finger-nail, when the dime will gradually move toward you from under the glass.

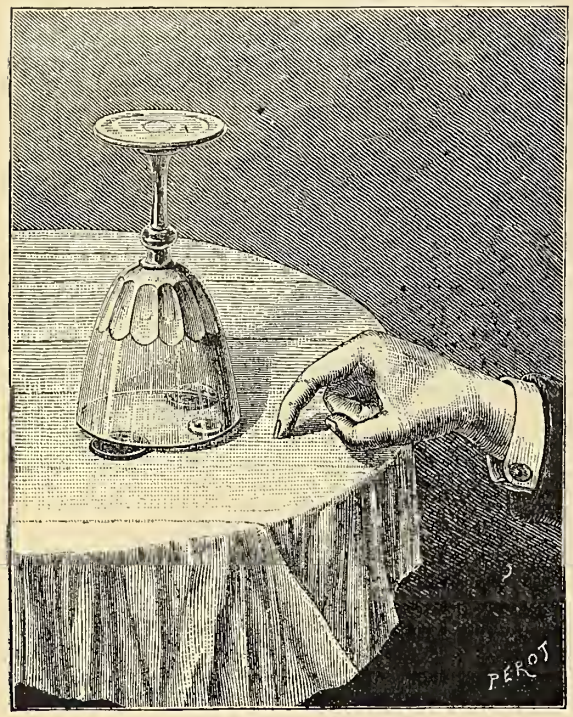


Fig. 1.—REMOVING A COIN FROM BENEATH A GLASS.

Another Puzzle Trick

requires a little preparation beforehand. You need a decanter or water-bottle, with a shoulder, somewhat of the shape shown in fig. 2, and some nice straight rye straws. Those present are asked to lift the bottle by placing the straw within the neck. They could easily lift it by twisting the straw around the outside of the neck, but how to do it with the straw within the neck is the puzzle. The engraving shows how it is done. Of course the straw must be a good stiff one. An amusing illustration of the center of gravity can be shown by whittling a cork in the shape of a bird's head, using a piece of quill to represent the beak. By the use of a pin, this may be fixed to the top of a common bottle cork, at the lower end of which another pin is inserted. This is an old table trick, and the puzzle is to make this bird appear at the top of a bottle. If a couple of forks are inserted, one on each side of the cork, a coin placed over the mouth of the bottle, and the cork set upon this by its pin (fig. 3), the whole affair will move around if properly started, and "bob" about in a manner so amusing as to quite repay the little trouble required to prepare it by the laughter it causes among the members of the party.

The Game of "Shadow Buff"

is a very amusing affair, and requires little preparation. It is usually played by placing a strong light behind the spectators, and allowing those who take part in the game to pass between the light and the white wall, or a sheet hung up for the purpose. Those who thus cast their shadows can disguise themselves as they please. Another and better method is to have the shadows thrown upon a transparent screen. If a house has folding-doors between two rooms, a sheet hung over the opening gives abundant space for the display of shadows, but an ordinary door will answer. Stretch a sheet tightly over this. The room containing the company is to be dark, while on the other side of the sheet is to be a single strong light. A number of amusing tricks can be played with this. By placing the lamp high enough to give a shadow of the face, a capital game of "Shadow Buff" can be played. By setting the lamp upon the floor, at proper distances, wonderfully distorted shadows will be thrown upon the screen. If one steps over the lamp, to come between that and the screen, he will be seen by the spectators to drop from above in the most wonderful manner, and if he steps back again, his shadow will appear to go upwards in a manner equally mysterious. Two persons, one as a Policeman apparently chasing a thief, can make a great deal of sport in this shadow-game.

A Chinese Restaurant.

One of the most amusing shadow games we ever saw was a Chinese bill of fare, with rats, rabbits, and many other such things, and prices attached—the Chinese characters cut out of black paper and pasted on a sheet of tissue paper. The shadows of these were thrown upon one side of the sheet. A Chinaman came in and lay down so that his shadow looked like a thin giant on the sheet. The restaurant man passed him various articles, which appeared by the shadow to enter his mouth, and to be chewed and swallowed. The artificial rat, cut out of black paper, being passed many times, it looked to the observer as if he had eaten 20 or 30 of them, and so of other things, as loaves of bread, links of sausages, etc. By moving the light further occasionally, his body appeared to swell out very largely with what he ate. By and by he got up, and a bill of many dollars was presented him (in shadow). He refused to pay, was thrown down, and by a saw moved up and down between him and the light, he appeared to be cut open, and the enraged caterer seemed to take out and throw to one side all he had eaten, and the changing position of the light made the Chinaman appear to shrink greatly.

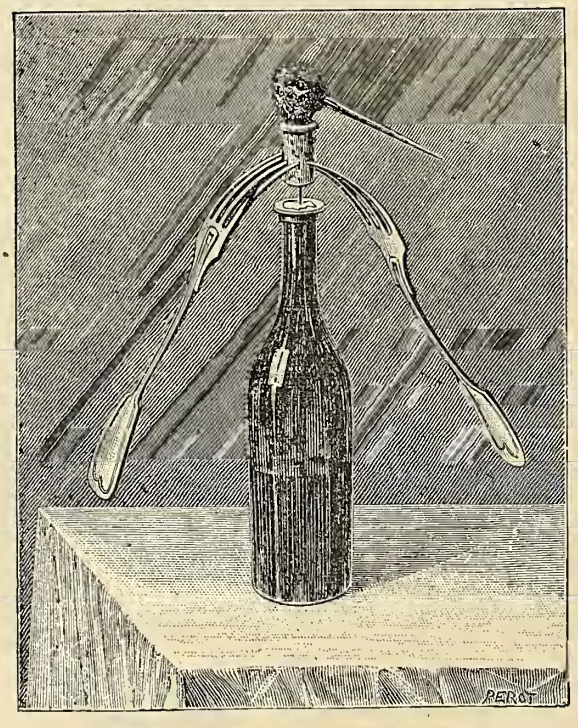


Fig. 3.—AN AMUSING "BOBBING BIRD."

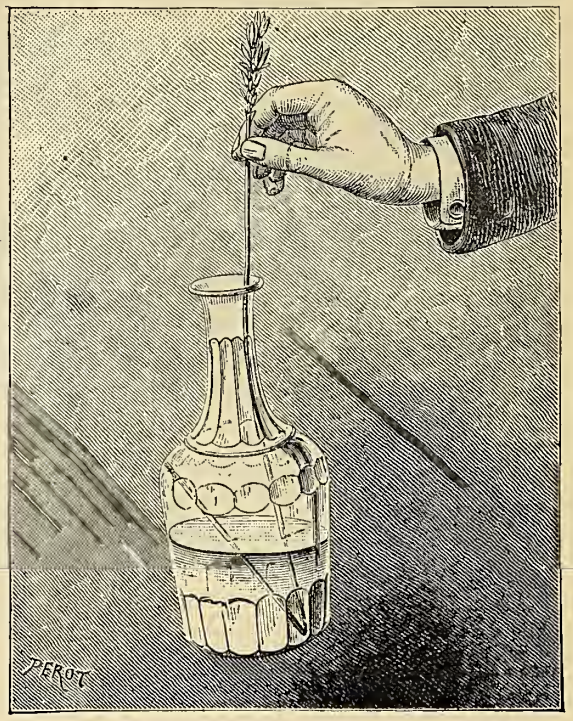


Fig. 2.—LIFTING A BOTTLE WITH A STRAW.

Some Wonderful Christmas Pies.—Our Christmas pies are usually the well-known mince and apple tarts, while Jack Horner's famous pie was said to have been stuffed with plums. In the olden times, a meat "pasty," or a rich crust filled with the breast, legs, and wings of fowls, was considered a proper dish for the merry Christmas-tide. They were sometimes of an enormous size, and in these days we should open our eyes in astonishment at such a pie as was made in 1769 for Sir Henry Gray, Bart., by his house-keeper, Mrs. Dorothy Patterson, and shipped to him in London, from her home at Howick. Its ingredients were—two bushels of flour, twenty pounds of butter, four geese, two turkeys, two rabbits, four wild ducks, two woodcocks, six snipe, and four partridges; two neat's tongues, two curlews, seven black-birds, and six pigeons. It was considered a great curiosity, and was, no doubt, an object of pride to the good woman who concocted it. The pie was nearly nine feet in circumference at the bottom. This pie weighed twelve stones (168 pounds,) and required two men to serve it at table, when it was fitted in a case with four wheels, and moved around from guest to guest, each helping himself.

But even this wonderful pie was exceeded in size, by one presented by James, Earl of Lonsdale, to King George III, and which contained: two geese, two tame ducks, two turkeys, four fowls, six pigeons, six wild ducks, three teals, two starlings, twelve partridges, fifteen woodcocks, two Guinea fowls, three snipe, six plovers, three water-hens, one wild goose, one curlew, forty-six yellow hammers, fifteen sparrows, fifteen chaffinches, two larks, four thrushes, fifteen field-fares, six blackbirds, twenty rabbits, one leg of veal, half a ham, three bushels of flour, and two stones of butter. It weighed twenty-two stones (308 pounds,) and had to be carried through London on a two-horse wagon, and we are sure all will agree that it was a truly

royal dish to "set before a king." For those who care to try one of these early English confections for their Christmas feast, we give a quotation with recipe for the ordinary pie, taken from an ancient book. "Every family against Christmass, makes a famous pye, which they call Christmass-pye. It is a great nostrum, the composition of this pasty; it is a learned mixture of neat's (cow's) tongue, chicken, eggs, sugar, raisins, lemon and orange peel, various kinds of spicery, etc.," and in the North of England, a goose was always considered a necessary ingredient. These pies were baked in long, deep dishes, representing the manger in which the infant Jesus was laid.

A Christmas Stocking Puzzle.

Little Tommy hung up his stocking on Christmas Eve, and in the morning found it stuffed to overflowing. The first thing he pulled out was *part of the ear;* the next a *pinnacle;* then a package of *recent eras*, and a *blow on the side of the head*, filled with *sweet fruits.* These were followed by an *Ancient Murderer;* an immense *name of a celebrated prince;* two *divisions of the Bible;* a handful of *screw fasteners;* a pair of *fish;* a stick of *a pungent medicine*, and a *writing implement and table utensil combined*, while hidden away in the toe was a bright, *precious metal girl's toy, with two letters attached.*

The Round Robin.

Something for Every Boy and Girl.

Dear Boys and Girls: For all who are readers in your Department in the *American Agriculturist*, this letter is especially intended. We propose in the coming months, to make your share of the paper very attractive and instructive, with beautiful pictures, and entertaining stories, sketches, and puzzles, and if possible, we would like to introduce some of the little folks who live in the South, to those whose home is at the North, and the young agriculturists at the East, to those in the West, so I suggest that you all write me some nice little letters, telling all about your pets, and what you are doing, and from these I will make up a big letter, a sort of "round robin," in which all have a share, and print it each month in the *American Agriculturist.* Thus Mary, who lives in New York, will hear of the pet cow owned by little Sarah in Kansas, and James, far up in Michigan, can become interested in the work and play of Harry, whose home is way down in Florida, and I am sure all will enjoy these chats upon paper. Now Christmas will soon be here, and the way you spend it will be a capital thing to write about for one thing. So children, let us hear from you, and be sure and mention how many of the enigmas, and puzzles you can make out.—Address your communications to "Round Robin," care of *American Agriculturist*, No. 751 Broadway, New York. ROUND ROBIN.

A Poor Little Girl.

BY FAITH ROCHESTER.

She is poorer—that is, more to be pitied in some respects—because she is rich. If her mother could not afford a hired girl, Mattie would be required to perform various domestic duties, and that would develop both her muscles and her practical judgment. It would also prevent her giving steady attention to books, while over-working her brains during the period of physical growth. If her father could not afford her music lessons, she would not spend her evenings, after school, practising on the piano. She would have escaped near-sightedness, brought on by the music lessons, and unlimited reading added to study. She probably would have had rosy cheeks, and a vigorous well-formed body, instead of a sallow skin, and round shoulders, if she had been obliged to wash dishes, sweep and dust the rooms, make her own bed, and walk when she wished to go anywhere.

If they had been too poor to employ a dressmaker, perhaps Mattie would have worn simpler gowns of her mother's making, and have already begun to help make her own clothes, and she might have been left without corsets a little longer. But the fashionable dress-maker says it is time to be moulding her form, and she has selected suitable corsets for that purpose. "Tight lacing" is not proposed, there is none of that existing now, if we may believe the poor victims themselves, but they put the corsets on Mattie to prevent her form from expanding, according to nature's own vulgar method, and to keep it within the proportions of the fashionable ideal.

Already her anxious mamma has begun to consult the doctor about her weakness and her paleness. He says she needs more iron in her blood, and they are giving it to her every day with a little wine, hoping thus to make her rosy and strong. But the prospect does not look hopeful. Do I think, then, that wealth in itself is an evil, and poverty a blessing? No indeed! There is her school-mate, Jenny, whom I pity because she can not afford comfortable clothing, and has no warm under-flannels—though with all their money, Mattie's parents have never dressed her limbs warm enough in winter. Jenny has no comfortable winter cloak, no rubbers, and no umbrella when it rains. Her wretched home is in an unsanitary spot, where little good water is to be had. The whole family is sickly for lack of good air, good food, good water, good protection from the cold. Jenny works hard, and she is stronger than Mattie, but she has no better health on the whole. It is evident that poverty is not to be desired for the sake of good health. We do want more intelligence, and common sense put in practice.

I know another little girl, who has the pity of some of her friends, because her parents have just removed her from school, where she was doing well, but was not in apparent ill health. They said the mental work of her "grade," required more study than the school hours allowed, and she had too little time for genuine recreation and physical education. They were too wise to wait the results of overwork of the brain, during the years of growth, believing that "an ounce of prevention is better than a pound of cure." She has only lately entered her teens, and they deemed it not well for the future woman, that the vital currents should be directed mainly to the brain. They want her to have enough "iron in the blood," to make her strong, and plump, and rosy, and they know that nature will attend to that, if pure air, and good food are supplied her, with a fair chance for the bones, and muscles, and nerves, to appropriate their share of the blood's building material. Education, technically speaking, will not stand still, though it may go on more slowly, than the schools prescribe.

The Vitality of Seeds, and the Influence of Light and Soils upon Germination.—Prof. W. W. Tracy, Detroit, Mich., has shown by the result of tests of 3,600 samples of garden vegetables that there is a marked difference in the usual vitality of different varieties of the same species, and that low vitality usually accompanies and is proportioned to the departures of the variety from the normal type of the species. Some 400 of those tests have been made simultaneously in test plates, and in paper, and by planting in mixed soil. With the exception of the grasses, which did the best in paper, and peas, beans, wheat, clover, and corn, which did equally well in the plates, all gave better and more uniform results in soil. A second set of trials showed that while seeds of strong vitality germinated quicker in the absence of light, clear light and abundant circulation of air were necessary to the best results when the seeds were weak. A third set showed that there is a marked difference in the germination of a given sample according to the soil used, and that the best results were obtained in proportion to its permeability to air. Mr. Tracy has not only given the average results of a large number of tests (in the last set, 15 samples were planted in each of 4 soils, and the entire experiment repeated 4 times), but has also prepared a table of frequency, which agreed so perfectly with averages of all the trials, as to leave little doubt that the tests indicate a general tendency rather than an accidental variation.

A Variety of Food.

Milk alone suffices for a young infant's diet, but considerable variety seems to be required by children of larger growth. Only a few dishes at each meal, but a variety from day to day, and in the different meals of each day, is a rule of simplicity, common sense, and of economy also, for small families. There is very great waste at the hotels and large boarding houses, which have the extensive bills of fare required by the many tastes to be gratified, and boarders pay roundly for the variety, whether they profit by it or not. But the members of a family, where economy of material, of time, and of strength are requisite, should agree upon such arrangements, and compromises, as will make simplicity possible in the family meals. This is no small matter to a housekeeper who has the care of young children, and no second pair of hands and feet to supplement her own.

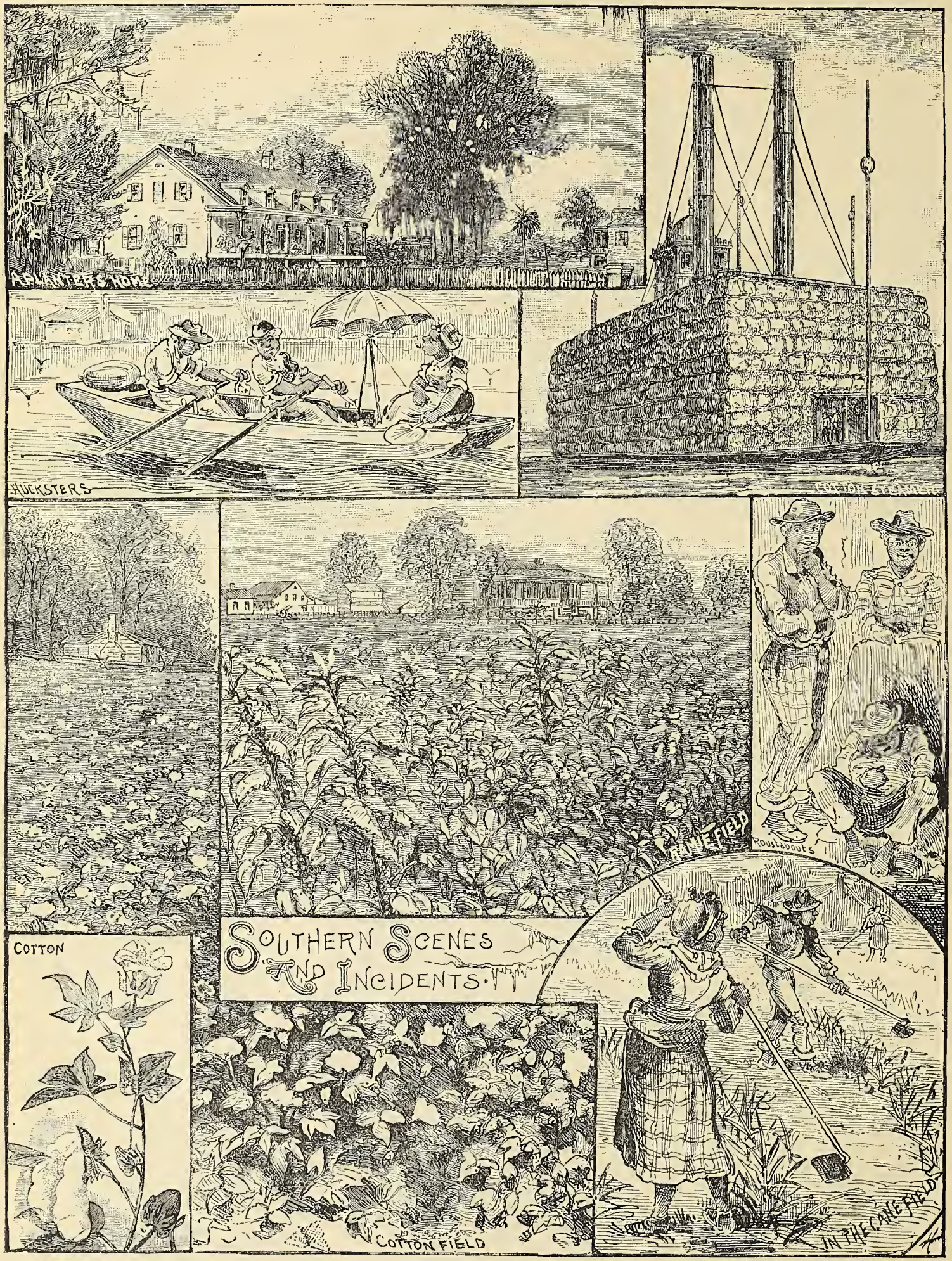
In the use of meats, an agreeable variety is possible, even when only one kind is obtainable for a length of time—the farmer's quarter of beef for instance. Savory stews and soups are not so common as they should be among country residents. In making and flavoring these soups and stews, the ingredients may be greatly varied at different times, if one has on hand an assortment of suitable vegetables, as onions, carrots, turnips, potatoes, tomatoes, cabbage, etc.; or of different flavoring herbs, either green or dried, as parsley, thyme, marjoram, summer savory, celery; and nutritious thickening materials, like pearl barley, split peas, white beans, rice, macaroni, or vermicelli. When a variety of fresh meat is not to be had, salt fish, or canned fish, and dried beef afford a change.

There are so many kinds of good bread, that it seems a shame that many families seldom get a taste of anything but yeast bread of white flour, and saleratus biscuit. "New process" white flour, is "a good thing to have in the house," but it should never be the only wheat flour in daily use. No white flour from wheat can give all of the mineral elements needed by the human body. Genuine graham flour, and entire wheat flour, and cold-blast flour, all afford good bread, and a chance for experimenting with loaves, gems, biscuits, crackers, rolls, etc. Then there is oat-meal, and corn-meal, and barley, and cracked wheat, and crushed "Indian," and hominy—all good for mush, and some of them for bread and cakes. Every kind of mush may be sliced cold, and fried brown for breakfast, and most kinds may be made into nice mush balls, by kneading them stiff with flour and a little thick cream, and baking them, or into pancakes by mashing them in some milk or butter-milk, adding soda (one level teaspoonful for each pint, or one-half level teaspoonful for each teacup of sour milk,) with eggs and flour enough to make a proper batter. The brown flours are best for this purpose.

Of dessert dishes—pies, cakes, puddings, blanc manges, etc., there is an endless variety, and with a good dressing, the plainest mushes make nice dessert. For such dressing, there is nothing better, in my opinion, than rich sweet cream, or good cream sweetened and flavored. Jelly or nice fruit sauce makes a fine accompaniment to this dessert. Every kind of mush may be moulded like blanc mange. For example, dish your graham mush, or oat-meal, or "hasty pudding" (not too "hasty," but well cooked,) into teacups. When cool, invert these upon saucers, put a little jelly upon each, and pour the cream dressing around it. Good cooked pudding sauce goes well with any plain mush.

However nutritious the food, the same thing from day to day at last becomes tiresome to the stomach, and a change to another kind of good food affords relief. Country people who have milk, cream, and fresh eggs always at command, have a range of excellent dishes within reach, which city people can seldom provide, but they are apt to have a much narrower variety of food than those who live in town, and have everything to buy. Usually it would be better economy to provide a larger variety of food materials. Among these, good fruits should have a large place.

MINNESOTA HOUSEKEEPER.



Designed and Engraved for the American Agriculturist.

Scenes in the Southern States.

This number opens with a beautiful Northern Winter Scene. On the opposite page is an equally attractive and more stirring picture of Southern life.

One visiting the Southern States after an absence of thirty years or more can but be forcibly impressed with the marked progress made in Agricultural development. There is not less of cotton culture, but more of other crops. While truck-farming is by some older planters looked upon as small business, it has brought to the Southern States a vast amount of much needed ready money, and has played an important part in the general improvement. Not only this, but the agriculture of the South has been greatly diversified by other crops. Formerly a large share of the hay consumed in these States came from the North. There are now, within our knowledge, several farms devoted exclusively to the growing of hay and baling it for market, and we are glad to add, to the great profit of the owners. As an indication of this new life, we may quote one of the leading nurserymen of the South, who not long ago stated to us, that the demand for fruit trees from Texas was so great that he found difficulty in meeting it. These and many other facts indicate that in the future, the agriculture in the South will be varied, and not solely devoted to cotton. That there will be any less cotton raised, we do not believe, for of all the world, some portions of the Southern States are best suited to this wonderful crop. Aside from its commercial value, the cotton crop has much that is picturesque and attractive. The preparation of the soil, the planting and care of the young plants are best suited to the labor now most abundant at the South. The beauty of the cotton plant when in "the square" and in bloom, but above all its rich appearance when the opening bolls show that the fibre is ready for the pickers—is most striking. The picking, employing men, women and children, is a merry scene, and a prelude to others of busy industry. The work of the gin; the baling; the conveyance to market, by water, or by those nondescript teams seen no where but in the cotton districts; the final work at the "compress," previous to the shipment on ocean steamers—are all features of interest to the stranger. The time is not far distant when a greater variety of crops will be produced in the South, but also through improved methods of cultivation, it will grow still more cotton.

Opinion of an Eminent Artist.

I was delighted this morning, in passing the window of the *American Agriculturist*, to see offered as a Premium a reproduction of a very beautiful picture, "In the Meadow," by Dupré. This picture is an educator, and I am glad to see the *American Agriculturist* the first to take hold of it.

Oct. 27, 1882. F. S. CHURCH.

Vegetables and Fruit from the Southern States.

Those who have kept the run of the markets in northern cities are aware of a marked change in the past ten or fifteen years. Formerly there were regular seasons for both vegetables and fruits; strawberries came in June and tomatoes in July and August, and were not looked for earlier. This at present is all changed. Take tomatoes, for example; the first in the market appear in February, from Bermuda; these are soon followed by a supply from Florida; others soon after from Georgia, and so on northward, until the New Jersey and Long Island crops are ready. This cultivation of vegetables at the South for northern consumption has not only had its effect upon the markets at the North, but it has brought prosperity to portions of the Southern States, and has had a marked effect upon southern agriculture in showing that there could be profit in something besides cotton. A few years ago we visited a Georgia planter, who seemed to be quite disheartened at the fact that a friend of his, near Charleston, with a few acres in strawberries, tomatoes, etc., received a larger money return than he did with all his many acres in cotton, and employing a large number of hands. The cultivation of vegetables for northern markets is not only engaging the attention of those who already reside at the South, but market gardeners, who have had experience in the Northern States, are turning their attention to the South with a view to competing with those already engaged in the business. A northern gardener who went to Georgia since the war, assured us a few years ago, that he had an ample income merely from his asparagus bed. One, to make an asparagus plantation, must wait at least three years before he can have any returns. Hence there is little competition, and there can scarcely be a more profitable investment for those who can afford to wait.

The Cotton Crop.

The World's Yield.—Nearly Four-Fifths (78 per cent) Grown in the United States.—The Crop Can be Made Far More Profitable.

Very few have any adequate conception of the magnitude of the cotton crop grown in a small number of our States, nor of the practical monopoly we have in this product over all the rest of the world. Fewer still, among the producers themselves, appreciate how profitable this crop may be made, simply by increased intelligence on the part of the cultivators. In no other crop is there so fair a chance for large returns for time, labor and capital expended. In grain and dairy products we have competition in nearly every other country. Next to food, cotton is a prime necessity for a large part of the human race, yet its culture is necessarily confined to a narrow belt of the earth's surface, below 37° degrees of latitude, and only a small part of this belt will produce good cotton.

WHERE GROWN.—The present annual cotton crop of the world is about 8¼ million bales of about 450 lbs. each, or **3,825,000,000 lbs.**, produced as follows:

United States	78 per cent.	Egypt	5 per cent.
East Indies	15 per cent.	Brazil	2 per cent.

That is, our country produces nearly four-fifths of the entire world's cotton crop, or 3¼ lbs. to 1 lb. grown elsewhere. Our four annual crops prior to the present year, aggregated 22,877,000 bales of the average weight of about 460 lbs., the average annual crop being 5,719,250 bales, or 2,635,135,750 lbs. At the average price in the New York market of 11¼ cents (nearly,) the annual value exceeds Three Hundred Million Dollars.

What Becomes of the Cotton.

Of our own crop, not quite one-third (32 per cent) has been manufactured at home, and over two-thirds (68 per cent) has been exported to other lands, most largely to Great Britain. (Of last year's crop we used about three-eighths, 37½ per cent, and exported five-eighths.) Of the world's total production of cotton, the little territory of Great Britain takes and manufactures almost two-fifths, or 39 per cent. The consumption, in manufactures, by different countries, is shown approximately in the following table:

Great Britain	39 per cent	Italy	2 per cent
United States	26 per cent	Switzerland	1½ per cent
Germany	8 per cent	Sweden, Norway, Holland, Canada, etc.	2 per cent
Russia	6½ per cent		
France	6 per cent		
Austria	3½ per cent		
Spain	3 per cent	Total	100 per cent
East India	2½ per cent		

The value of the cotton crop is very largely enhanced by the recent discoveries, for such they may be called, of the great value of the seed for oil, for feeding cake, and as a fertilizer. Passing this over now, we are pleased to know that the experience of a comparatively small number of cotton growers, some of them with but recent practice, is demonstrating very clearly that intelligent culture can readily double and treble the profit realized from this crop; that while the great mass of cotton growers have hitherto barely eked out a poor living, and only that by reason of the natural fertility of the soil, and an exceptionally favorable climate, yet in no other department of agricultural industry does correct information, intelligence and skill bring larger returns. The people are awakening to the comprehension of this fact, and we invite communications from our southern readers, illustrating from their own experience and observation how cotton may be grown more profitably by the people generally.

The Good Work Goes Bravely On.

New subscribers for our paper continue to pour in from every quarter. During the past thirty days we have received far more new names than during any corresponding period for ten years. The friends of the journal will be pleased to know of this great prosperity. We are confident they will be glad to lend a helping hand in swelling the number of recruits to our vast army of readers. May we not ask every one of our subscribers to bring one, two, three or more friends or neighbors with them as they re-enlist for another year?

Southern Live Stock.

The saddle horses of the South have always been the admiration of Northern horsemen. Light, graceful, fleet, enduring, easy, and high-mettled, many of them thorough-bred, they are like nothing which we have here, and if well broken to saddle and to various gaits, especially if they would take fences easily, would no doubt meet ready sale in Northern cities.

Southern cattle, with the notable exception of a few herds, have been "nothing to brag of," until quite recently. Now Southern gentlemen are waking up to the fact that the best breed for milk and butter may be profitably raised at the South. Direct importations of excellent animals have been made. Many Jerseys of the highest reputation and of bluest blood have been taken South and are doing exceedingly well.

The magnificent sheep ranges of Virginia, North Carolina, and Tennessee, have long invited the best blood of Spanish, French, and English breeds for the improvement of the native flocks, according to the market, whether for early lambs, for mutton, or for wool.

Preparing for Truck Farming at the South.

BY DOCT. A. OEMLER.

LOCATION.—The requisites the truck-farmer must have in view in selecting a location are cheap, safe, and expeditious transportation of produce to the market, convenience for procuring manure, a soil adapted to the crops he wishes to grow, and sanitary surroundings. Other conditions being the same, water carriage is preferable to that by wagon. If, in the selection of the land, one is confined to a single soil, he should select one consisting of a mixture of organic and inorganic matter; a light, deep, sandy loam, with plenty of humus, or vegetable matter. Experience has shown that, without this, crops will not yield as well in proportion to the quantity of manure applied. Locations in the immediate vicinity of the larger coast cities, offering the best facilities in the way of transportation and manure, are in the possession of local market gardeners, and such lands are generally highly fertile. The truck-farm, requiring a larger area, is compelled to locate several miles beyond the corporate limits, on the line of a railroad, or on the banks of a navigable stream. The land will often be one, the fertility of which has been shipped to Europe, or the North, in the shape of cotton, by some planter, whose measure of success was gauged by the rapidity with which he could.

exhaust his soil. The renovation of the land will be the first desideratum. To that end, and the consequent production of remunerative crops, the plowing under of green manures, application of fertilizers, proper preparation and careful tillage and deep plowing will be necessary. The practice of deep plowing will depend upon circumstances; a good, though shallow mould, or other soil, resting upon a sticky clay subsoil would not be benefited by being at once broken up deeply, bringing large, hard lumps of unfertile clay to the surface, and deteriorating the physical quality of the top-soil. Drainage, especially under-drainage, renders a clay subsoil, when moved by the plow, more susceptible to pulverization; and in such case, a thorough drainage should precede deep plowing.

Drainage, Its Advantages.

Under-drainage prevents the drowning out of crops after heavy rainfalls. It increases the fertility and pulverization of the soil by admitting air. It keeps the ground moister in a dry season. It prevents the washing away of the soil and its fertilizing materials. It permits the farmer to work his land sooner after a heavy rain, and earlier in the spring, and prevents the land from becoming sour in wet seasons. The total absence of water would be destructive to vegetation, for it is itself necessary to plant life, but undrained land is not merely wet, it becomes water-logged, and through absence of air, drowns out the plants. When, however, water passes through and away from the land, air takes its place, and also passes through the drains and finds its way into the overlying soil, increasing its fertility, and pulverizing it. The reason why drained land gains heat, and the temperature of water-logged land decreases is the lack of heat-conducting power of water; heat cannot be transmitted downwards through water. Efficient drainage being provided, the land should be broken up and pulverized as deeply as possible.

Plowing and Stirring the Soil.

Owing to the absence of a covering of snow and of successive freezings and thawings, fall plowing, so useful at the North, is destructive of fertility at the South and not advisable.

The land having undergone proper preparation, having been sufficiently manured, and the crop having been planted with special regard to the capacity of the soil, the most important matter is, thorough culture or keeping the earth fine and mellow among the plants. Stirring the soil can scarcely be repeated too often during the earlier periods of growth, or until there is danger of injury to the roots or to the tops of growing plants by the cultivator. The ground may be too wet, but never too dry, for stirring; because the more frequently it is broken up, fined, and aërated, the more moisture will the soil absorb from the atmosphere. Stirring is an operation that should be performed after every rain sufficient to cause incrustation or baking, which would prevent a free admission of air into the soil. The most obvious benefit of stirring the soil is, the destruction of weeds; for no crop can become remunerative, if crowded by weeds which deprive it of air, light, moisture, and use up a part of the fertility of the soil.

The plow, horse-hoe and cultivator are to be used, whenever available; but the hand-hoe must always be relied on for the finer and more careful work, when, particularly in the later stages of the crop, only superficial stirring is advisable. When plants are grown in a crowded state, darkness and want of air elongate the stems and leaves at the expense of the roots and of a general healthy condition. The operations of thinning and hand-weeding are performed in connection with hoeing to admit a free circulation of air around the remaining plants, and the sun is permitted to have an immediate influence upon each, developing the desired form, bulk, and other qualities.

Poinsettia.—The florists' windows about the holidays, are all aflame with the intense scarlet of *Poinsettia*, of which the plant growers manage to produce an immense stock, especially for New Year's decorations. Many are surprised to learn that the flowers of this plant are so unattractive that it would not be grown for its true flowers. These are green and yellow, but the cluster is surrounded by bracts, or floral leaves, of the most intense vermillion. The proper name of the plant is not *Poinsettia*, but *Euphorbia pulcherrima*. As it is likely to be called *Poinsettia* for a long time to come, and it answers well enough as a common name, let us have it correctly written. The daily papers are eloquent over its beauty, but almost invariably call it "Poinsetta"; indeed, we once heard a lady speak of it as "Ponsetter." The plant is a native of Mexico, and was named by an English botanist in honor of the Hon. J. R. Poinsett, then U. S. Minister to that country. Botanically it is not distinct from *Euphorbia*. The daily papers are also very apt to get the brilliant rose, General Jacqueminot, as "Jacques Minot," and one had it as "Jack Miner."

Holiday Gifts.

By the time this paper reaches our subscribers, they will be thinking about the pleasant Holiday Gifts they wish to give to relatives, friends, and neighbors. They can find no prettier, or more appropriate articles, than are offered in our Attractive 44-page Premium List, issued in October; and what is especially worthy of consideration, they can secure one or more of these articles without money, and with very little labor, by procuring subscribers to the *American Agriculturist*. With such an opportunity as is here presented for obtaining them, every man, woman and child in the land ought to have a pleasant souvenir on Christmas of some kind. Parents, what shall we send you for your children? Children, what will you order for your parents, and for one another? Elsewhere in this paper is a Table of the Premiums offered.

What is a Breed?

When any kind of farm animals has acquired certain characteristics through a series of generations, and they have become so firmly fixed as to be transmitted to the offspring, with a great degree of certainty, such animals taken collectively constitute a breed. The time that it has taken to develop and impress these breed characteristics have been very long in some instances, while other breeds have sprung up in a few generations. The work of establishing a good breed is a difficult one, and demands several sterling qualities in the breeder. He needs to have an ideal animal in his mind toward which all his efforts tend. In other words, he must have a clear conception of all the good points desired in his animals, and also must be keen to see any bad ones that are to be eliminated. He needs not only to be able to see desirable qualities, but be able to develop them, and this calls for a knowledge that is peculiar, and a judgment that is uncommon. Without these qualities a breeder may be carried away by beauty of form or a charming color, to the neglect of deeper-seated and vastly more important qualities. The breeder who hopes to produce an animal that is the best for everything, has started on the wrong track, and will come out at the end, a most disappointed man. The qualities that aid a horse in winning a hurdle race are not in combination with those that make an animal of the greatest service before a heavy cart. The breed whose animals makes the largest amount of the best beef at three years is not one that will sweep the prizes for dairy products. "Jersey Queen," with her leading record of 851 pounds of choice butter in a year, would not grace the shambles when dressed for the market.

By a wise selection of animals for some particular points, it may be at the expense of others, with great care in getting offspring, and the use of abundant good food, excellent specimens of any kind of stock may be produced. The breeder must remember that one of his fundamental principles is, "like produces like," but as there is some variation, even among well-bred animals, he must follow a second rule in breeding, and "always select the best." In answer to the question put at the heading: A breed is an assemblage of animals possessing certain characters in common, which are different from those of any other groups, and able to retain those points when bred together.

Mustard as a Weed.—"T. G. B.," Monterey, N. Y., wishes to know how to eradicate "Yellow Mustard." He does not send a specimen, nor does he say whether it is the wild mustard (Charlock), or one of the cultivated mustards that has become a weed. Practically it makes little difference which it may be. The seeds of all retain their vitality for many years when buried deeply in the ground, and whenever, in plowing, the seeds are brought near the surface, they will germinate. If circumstances allow, the converting of the field into a sheep pasture for a season, the weed will be destroyed, and the sheep benefited. If "T. G. B." does not keep sheep, the best of all remedies, he should make sure that the mustard crop does not ripen its seeds, which he can do by mowing, or otherwise cutting it down in season.

Asparagus Seeds.—"T. B." asks us: "As the ripening of seed is exhausting to plants, would it not be well to strip the seed balls from the asparagus as soon as they are formed, unless seed were wanted?"—No doubt seed-bearing exhausts the asparagus plants, but only a portion of the plants are fertile, the others being staminate. The fruit, or seed balls, are small and much scattered, and it would be much labor to remove them, and we doubt if the operation would pay. Still, it is a fair subject for experiment.

Nameless Inquiries come so frequently that they are very annoying. As examples of many, we cite only two. One comes from a friend in Bosque Co., Tex. As he signed his letter only "Respectfully Yours," we were unable to inform him that we had not published a description of the fence about which he inquired. The other letter comes from "An Inquirer" in Nepang, no state is given, and the post-mark, as usual, is quite blind. The lack of name and proper address prevented a reply to his inquiries about Rose-bugs, which would have quite disappeared by the time we could have answered through the *American Agriculturist*. It is quite inexplicable to us why persons will go to the trouble of writing a letter, often a long one, about some matter upon which they need a prompt answer, and throw away their trouble in writing, their paper, envelope, and postage stamp, and cut off all chance of a reply, by failing to give their names. There is nothing disgraceful in making an inquiry. We never publish names if we see the slightest indication of a desire that we should not do so. John Smith has only to write his name (John Smith), and we understand that he does not wish his name to be given.

Long Pruning the Grape.—"T. & B." when Downing says that a variety should be "long pruned," we take it that he intends that the vine should be allowed to bear more shoots, and canes, than usual. The usual pruning is to shorten the canes to two eyes, and this would give two shoots the next year. If, instead of two eyes, four, or six, were left, more shoots would grow. It means, in short, that some varieties should not be greatly restricted in their growth.

In the Meadow.

We are fairly besieged with applications from subscribers, and those who are not subscribers, for our beautiful Premium Plate Picture, described elsewhere. We have to say now, once for all, that it is supplied only to subscribers to the *American Agriculturist*, and they receive it free. A private letter to a friend in the country from Mr. F. S. Church, the eminent artist, contains this sentence: "I was delighted this morning (October 27), in passing by the window of the *American Agriculturist*, to see offered as a *Premium*, a reproduction of a very *beautiful* picture, 'In the Meadow,' by Dupré. This picture is an *educator*, and I am glad to see the *American Agriculturist* the first to take hold of it."

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It Will Not Color the Buttermilk. It Will Not Turn Rancid. It is the Strongest, Brightest and Cheapest Color Made.
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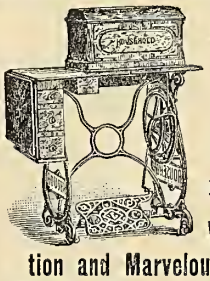

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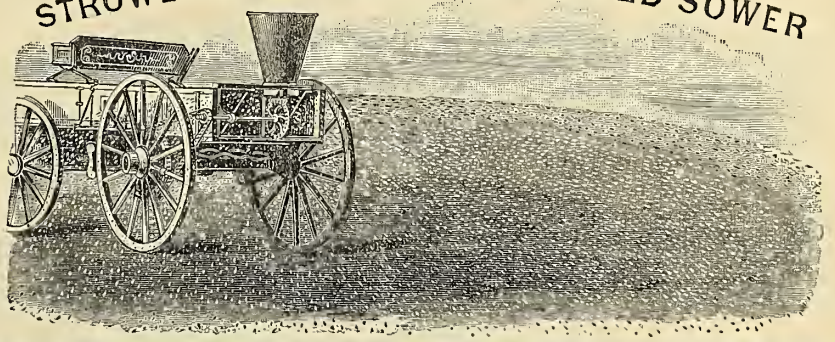

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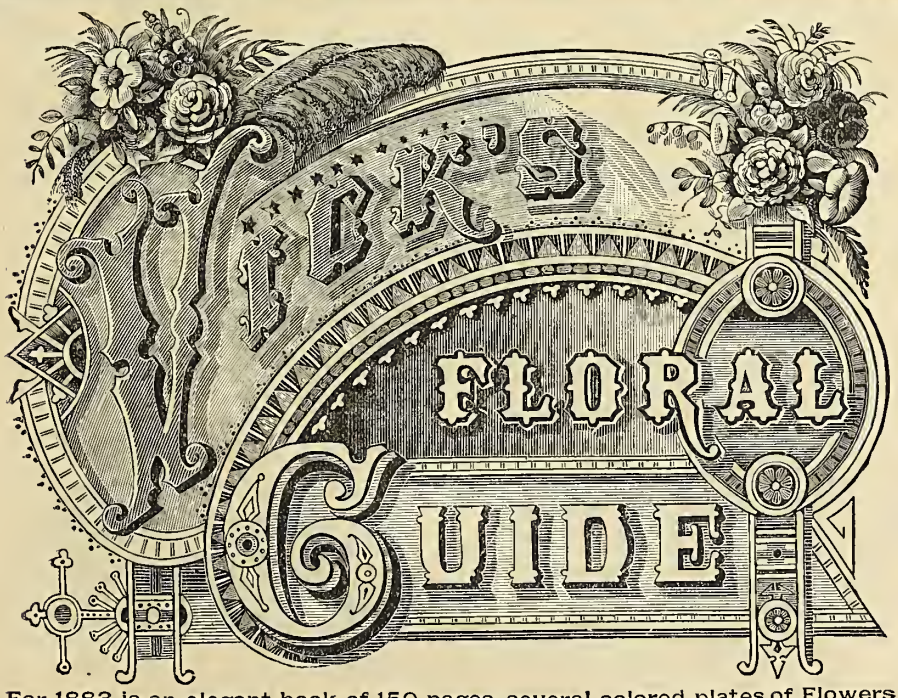

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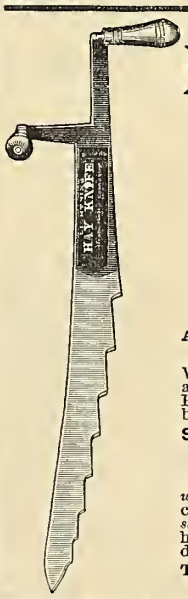

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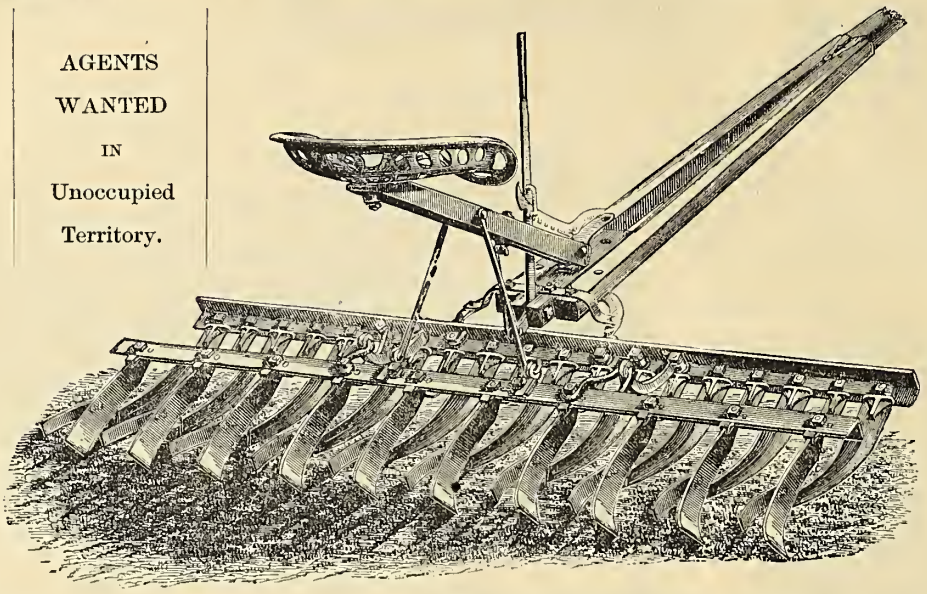

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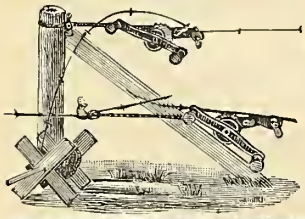

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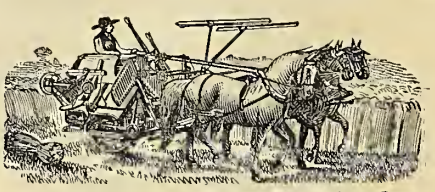

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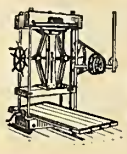

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"In the Meadow," Sent to Canvassers.—On the second page of this issue, we have made some suggestions for those who desire to secure Subscribers, Clubs, Presents, and Premiums. If such persons will turn to page five hundred and sixty-two (562), they will find a very full description of the magnificent Plate Picture, **"In the Meadow,"** by Dupre, which we give to every subscriber. On page five hundred and sixty-two (562), Mr. F. S. Church, the eminent Artist, has, unsolicited by us, expressed his opinion of this great Picture. While we shall furnish the Engraving to no one but subscribers of the *American Agriculturist*, we make this proposal, to wit: To every person who proposes to engage in the work of getting up Clubs, Premiums, and Presents, **we will immediately forward one of the Engravings for the purpose of Canvassing.**

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Clubs can at any time be *increased* by remitting for each addition, the price paid by the original members; or a small club may be made a larger one at reduced rates, thus: One having sent 5 subscribers and $6, may afterwards send 5 names more and $4, making 10 subscribers for $10.00; and so for any of the other club rates.

Bone Ashes, and Horse Manure.—"J. C. P.," Colorado, writes us: "Will you tell in your next number, the relative value of bone ash and horse manure? I have opportunity of obtaining either in almost unlimited quantity."—By all means use some of both. It is not likely that the application of over 1,000 lbs. of bone ashes to the acre would have a better effect than 500 pounds. You may, however, use 100 loads of horse manure to the acre, with good results, and for most vegetables, twice as much. The bone and manure may be composted with excellent effects.

The Transit of Venus.—Those who keep the run of such matters are aware that the planet Venus will cross, or make the transit of, the sun's disk on the 6th of December. As the observations obtained on this occasion furnish astronomers important data, several governments have sent out expeditions to different countries for the purpose. Great Britain has ten parties in her various possessions, especially equipped for the purpose, and the governments of Continental Europe have placed observers in the field. Our own government is not behind, as it will have four stations in the Southern Hemisphere, and several within our own territory. There will be observers from our Coast Survey and Navy at the Cape of Good Hope; at New Zealand; in Chili, and one in Patagonia. Cedar Keys, Fla.; San Antonia, Tex., and Fort Thorne, New Mexico, are the principal stations nearer home. Let us wish them clear weather.

Ringing a Bull.—"A. W.," San Francisco.—If you take the dividing wall or *septum* of a bull's nose between the thumb and fore-finger, you will find that the upper part, well forward, is thin, hard, and apparently bloodless, or nearly so, at least there is little room for blood-vessels and nerves. This is the point to pierce, and many bulls will stand still and submit to the piercing with a proper instrument, and the insertion of the ring without making much trouble, but it is safest to bind the head of the animal by the horns, to a strong horizontal beam, for then you can work with greater care, and less nervousness. Pinching the spot benumbs it, so that the operation is as painless as it is simple. The "Trochar" is very convenient for ringing an animal.

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235	Finger Ring	* 1.00	1
236	Finger Ring	* 1.00	1
237	Finger Ring	* 1.00	1
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280	Compass	* 2.50	3
281	Dog Call or Whistle	* .50	1
282	Dog Collar	* 1.00	2
283	Drinking Cups	* 1.00	2
284	Game Bag	* 2.50	4
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Starting Plants in the House or Hot-bed.

BY JOSEPH HARRIS—AUTHOR "WALKS AND TALKS ON THE FARM," ETC.

In the absence of a propagating house, much may be done in the way of starting early plants in one's dwelling or hot-bed. The principal impediment commonly experienced is in the difficulty of obtaining, in the spring, the proper kind of soil or compost to put in the boxes or hot-bed. Professional gardeners prepare the soil with great care the previous year, but if winter is about to set in, and you have nothing ready, excellent results may be obtained by placing in the cellar a load or two of any good light sandy loam; the lighter and richer the better. In the spring, before using it, run it through a sieve, so as to remove all stones and lumps and rubbish. If you have it, mix a tablespoonful of superphosphate to each half bushel of soil; then get some peat—moss, or Sphagnum, such as nurserymen use for packing—dry it thoroughly, and sift it fine, and to each peck of soil put two or three quarts of this fine, dry sifted moss; mix carefully, and you will have as good a material for starting fine seeds as I have ever used.

Leaf-mould is a very fair substitute for moss. It contains much plant food, is light and porous, and retains considerable moisture. By leaf-mould, I do not mean muck from the swamp, but the decomposed leaves and sand scraped up in the woods. Leaf-mould, like muck, varies considerably in composition and value. The best is obtained from Beech, Maple and Oak woods. The leaf-mould should be gathered the previous summer and kept in the cellar until wanted. Before using, it should be mixed with equal parts of sand and sifted. For merely starting plants, rich soil is not essential. Seeds will germinate in moss and sand as well as in the richest mould. After the plants are started and begin to grow, a little plant food is necessary, and in this case leaf-mould is better than moss. Equal parts of sods, sand and well-rotted manure made into a compost and worked over, and sifted until it is fine, is a favorite material for potting plants.

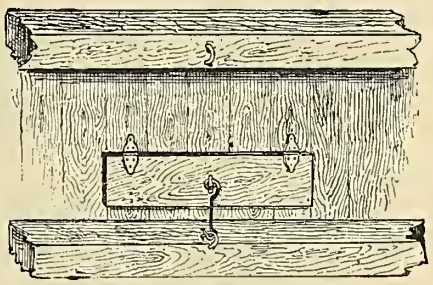
Dried muck from the swamps is an exceedingly useful material for the gardener. In many sections of this country it can be obtained at little more than the cost of cutting, drying, and carting it. No gardener ever has too much of it. It has many excellent properties. It will make heavy soil light. It will make dry soil moist. It will make cold soil warm. It is an excellent absorbent of water and gases. It is itself a manure, and can be used to great advantage in our stables, cow-houses and pig-pens, as well as for mixing with manure in our compost heaps. The practical difficulty is in getting the muck dry and keeping it dry. We want a place for storing it, and above all we want to form the habit of getting muck and using it on our farms and gardens. No one doubts its value, but we hardly know how to commence its use. It is, however, a very simple matter. We usually throw up the muck in the summer and let it lie in a heap until winter, when we have plenty of leisure to draw it. Another plan is to throw it up in July, turn it over a few weeks later to facilitate the drying, and early in the fall, before heavy rains set in, draw it to a shed, or cellar, or barn, where it can be kept dry and ready for use at any time. The farmer who has a good supply of dried muck on hand will find it of great use in many of his gardening operations.

The boxes I have used for starting plants are two and one half feet long, twelve inches wide, and three inches deep, made of half-inch stuff. A screw at each end, about an inch from the top on the outermost corners, is wound round by a piece of wire two feet eight inches long, the other end of the wire being twisted round to a screw fastened to the window. These boxes are placed on the sill of the window. The length of the box, of course, being determined by the width of the window, it can be made wide or narrow according as you have more or less room in the house. There may be windows where you could have them two feet wide without inconvenience; if so the plants will do just as well, and the boxes, of course, will hold twice the number of plants. I have had better success in starting plants in these boxes in the house, than in a hot-bed as ordinarily managed. The plants are in sight all the time, and are less liable to be neglected. The children, especially, soon learn to take an interest in these plant-boxes in the house. They require a little assistance in sifting the soil and moss, and putting it in the boxes, and in fastening the boxes in the window-sills. But they can sow the seed and cover it with a little sifted moss themselves. It is very desirable, however, to write the names of the seeds to be sown, with the date of sowing, on some wooden labels to mark the rows where the different seeds and different varieties are sown. If this is neglected much of the interest will be lost.

An Improved Stable Window.

H. M. FANCHER, PENN.

A convenient, serviceable manure window is here illustrated. Cut the window hole of a



A SIDE WINDOW TO STABLE.

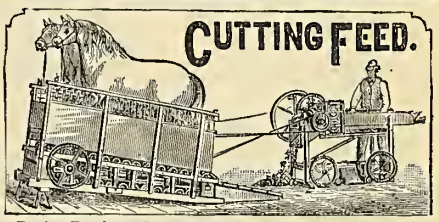
proper size. For the window a single board may be used; its size should be 2 or 3 in. larger in length and breadth than the window-hole, so as to overlap. Fasten it by hinges or leather-straps, so as to open upwards. The main feature about the window is the hook. This should be of stout wire or iron, fastened to the window by a staple immediately below its center, and of such a length as to hook into a staple driven into the outer end of the tie girth (or floor) immediately below. Thus fastened at an angle with the window, it serves as a brace, securing it from all outward or inward pressure. When open, the hook catches over a pin driven in the beam above. A window of this style of any length, up to 4 or more feet, will not clog or stick fast, is secure when closed, and out of the way when open.

Better Care of Meadows.

COL. F. D. CURTIS.

Red Clover and Timothy, mixed half and half, make a good meadow. Red Top is well suited for wet ground, and if carefully put in, will afford a large yield of hay of excellent quality. It is a waste of seed to put clover on wet ground. Timothy does well on dry ground, and will also grow on moist land, if it is under-drained, and the surface does not heave up with the frost. Red Top grows with more fibrous and extended roots, and will maintain its hold upon the soil for years. The same is true of Orchard grass, which has a very strong root. This grass starts early, is first to head out, and will produce the most after-growth of any variety. It is not so well adapted to meadows, on account of the sparseness of stems, making the yield of hay light in comparison with Timothy and Red Top.

The care of meadows in order to insure permanence, is the next important consideration. They are often injured by allowing the grasses to become too ripe before cutting, which weakens the roots. It is better to cut the grass while the stems are sufficiently green, and the juices active, so that a new growth will immediately commence. This will protect the plants from the scorching rays of the sun, and keep up the full vigor of the roots. It can not be expected that a meadow can be shorn of all life-giving verdure, during the hot, dry weather of mid-summer, and maintain a healthy condition. The meadows designed to be permanent, should be mowed first in the season, and never so pastured as to leave the crowns or tops of the roots of the grasses exposed. In fields where the ground is moist, inclining to wetness, an exception may be made, as a new growth will be rapidly produced. It is essential that there should be a surface protection when winter sets in. Meadows may be strengthened to make larger yields, and in fact, almost renewed, by spreading manure over them in the autumn. Another excellent plan is to sow them over with plaster (sulphate of lime,) as soon as possible after the hay crop has been taken off, which will help to start an after-growth, so much needed at this time. Another dressing of plaster in the spring will be beneficial. These extra attentions to meadows are unusual, but will abundantly repay the labor. The rolling of meadows early in the spring pushes the roots started up by the frost back into the soil, and smoothes down uneven surfaces for the mowing machine. In a very dry time, when the hay is ripe, the stubble should be cut at least two inches in hight, so that there may be a little juice left in the plant. This lack of thought and care on the part of farmers, is the reason why meadows so frequently fail. They are most effectually beheaded. We can never expect in our changeable and severe climate, to possess permanent meadows which are so natural to Great Britain, excepting on bottom lands, but by following carefully the suggestions here given, greater permanency may be given to them. This is more desirable after the labor and expense of making a meadow smooth, and clearing it of stones for the mowing machine. The annual wear and tear to a mower run over stones, will pay for fitting the land. This is often forgotten by those who work on a temporary basis. Permanency and painstaking are far better grounds for successful farming.



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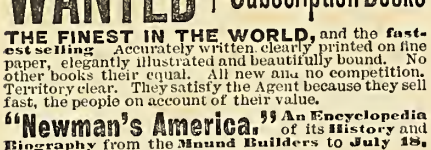

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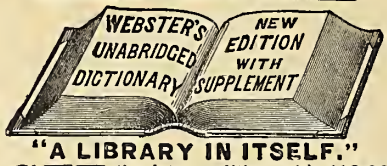

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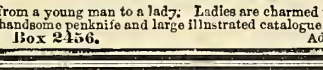

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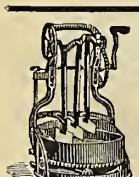

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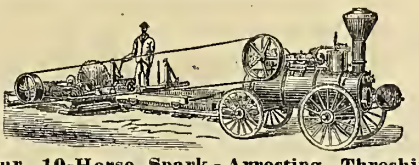

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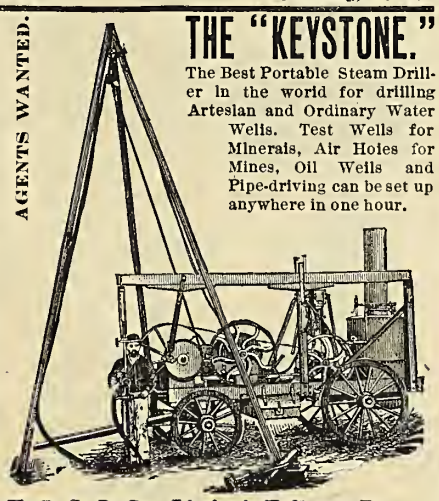

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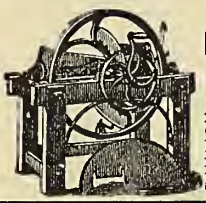

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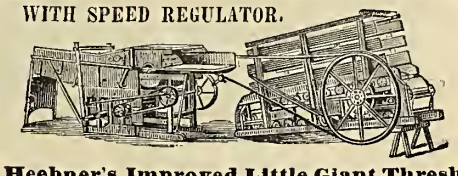

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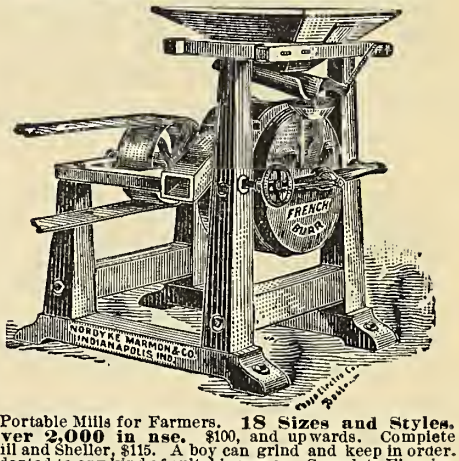

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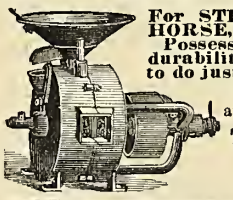

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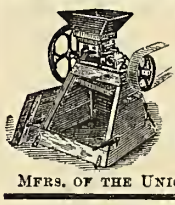

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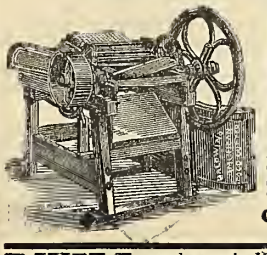

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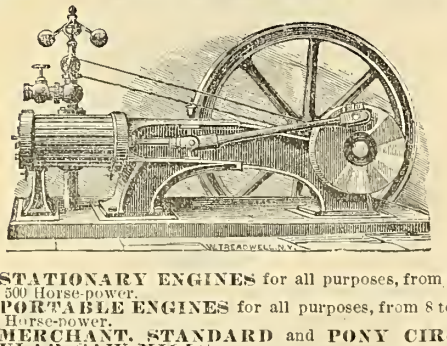

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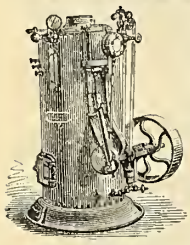

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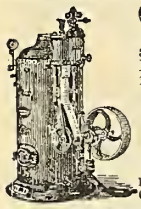

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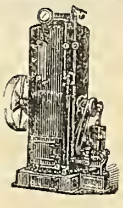

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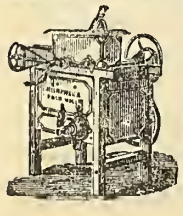

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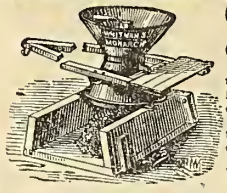

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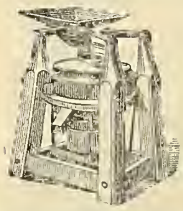

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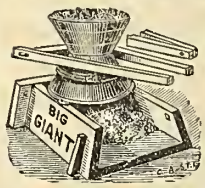

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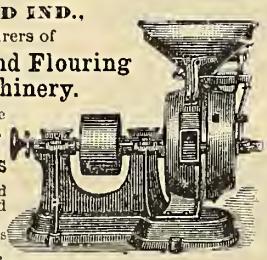

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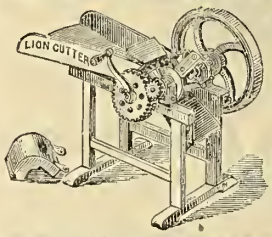

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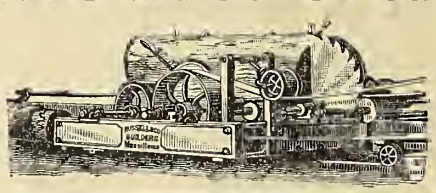

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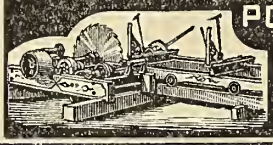

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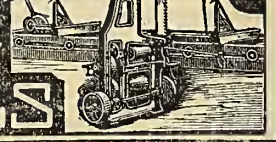

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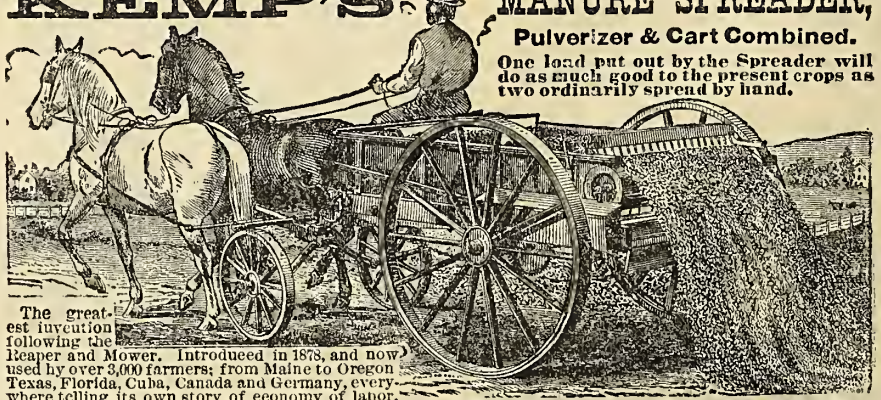

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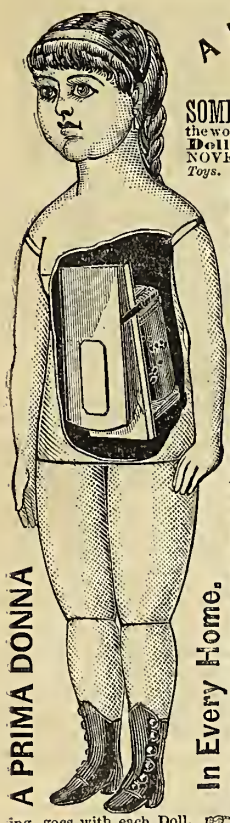

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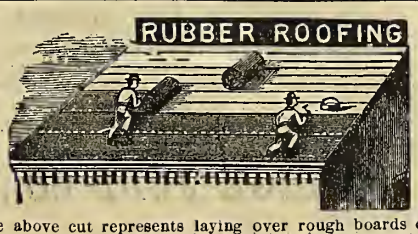

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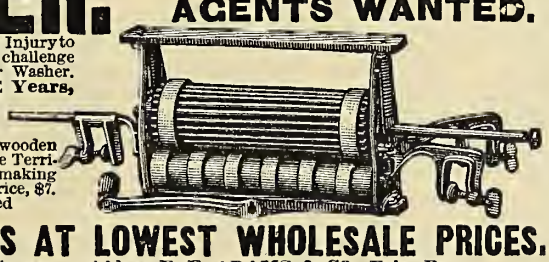

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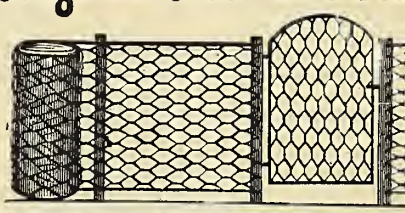

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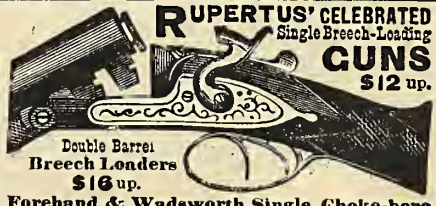

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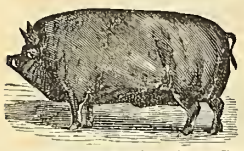

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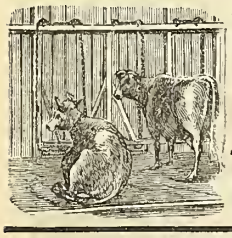

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SPECIAL ATTENTION IS CALLED TO PAGE 552, THIS NUMBER.

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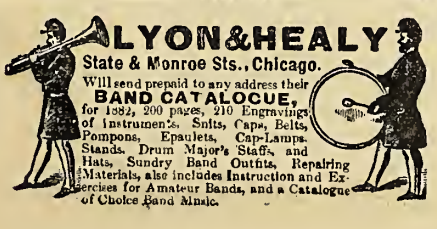

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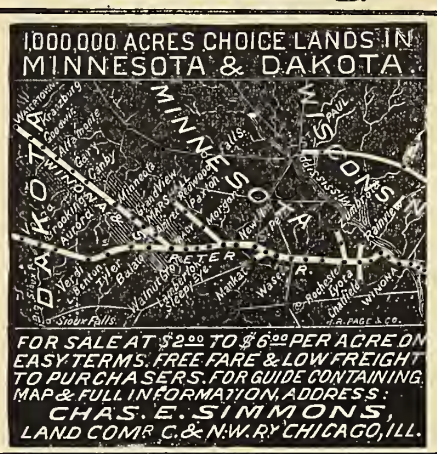

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